United States Air Force
F-35A Operational Beddown - Pacific
Final
Environmental Impact Statement

Executive Summary

February 2016

ACRONYMS AND ABBREVIATIONS

354 FW	354th Fighter Wing
ADEC	Alaska Department of Environmental Conservation
AFB	Air Force Base
AGL	Above Ground Level
AOR	Area of Responsibility
APZ	Accident Potential Zone
ATCAA	Air Traffic Control Assigned Airspace
BASH	Bird-Wildlife Aircraft Strike Hazard
CDNL	C-Weighted DNL
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
dB	decibel
DNL	Day-Night Average Sound Level
EIAP	Environmental Impact Assessment Process
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FNSB	Fairbanks North Star Borough
FY	Fiscal Year
HAMMER	Hazardous Aerospace Material Mishap Emergency Response
HRMA	Housing Requirements and Market Analysis
JPARC	Joint Pacific Alaska Range Complex
L_{dnmr}	Onset-Rate Adjusted Day-Night Average Sound Level
L_{max}	Maximum Sound Level
MOA	Military Operations Area
MSL	Mean Sea Level
MTR	Military Training Route
NEPA	National Environmental Policy Act
NH_3	ammonia
NOI	Notice of Intent
NO_x	nitrogen oxide
OSHA	Occupational Safety and Health Administration
PACAF	Pacific Air Forces
Pb	lead
$PM_{2.5}$	particulate matter less than or equal to 2.5
PM_{10}	particulate matter less than or equal to 10
POI	Point of Interest
PSD	Prevention of Significant Deterioration
SHPO	State Historic Preservation Officer
SO_x	sulfur oxide
SUA	Special Use Airspace
SUAIS	Special Use Airspace Information Service
U.S.	United States
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

Privacy Advisory for Final Environmental Impact Statement (EIS)

Letters or written comments received on the Draft EIS are published in this Final EIS. As required by law, the Air Force considered those comments and responded to substantive comments herein. Any personal information was used only to identify your desire to make a comment during the public availability period or to fulfill a request for copies of the EIS. Private address information provided with comments was used solely to develop a mailing list for the Final EIS distribution and was not otherwise released.

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ES.1 INTRODUCTION

This Final Environmental Impact Statement (EIS) presents the potential consequences of the Operational Beddown of F-35A aircraft in the Pacific Air Forces (PACAF) Area of Responsibility (AOR). The Proposed Action would base two F-35A squadrons at Eielson Air Force Base (AFB), Alaska, as an additive operational mission to the 354th Fighter Wing (354 FW). There would be a total of up to 54 F-35A aircraft based at Eielson AFB, or 48 Primary Assigned Aircraft, comprising 24 aircraft per squadron, and 6 Backup Aircraft Inventory. If undertaken, the first aircraft would be delivered in 2019, with the final aircraft arriving by late 2020, allowing full operational capabilities for both squadrons by 2021. This Final EIS also analyzes the environmental consequences of the No-Action Alternative, where the F-35As would not be based at Eielson AFB or within the PACAF AOR at this time.

ES.2 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The proposed beddown and operation of the F-35A within the PACAF AOR meets the President and Secretary of Defense's directives to reduce vulnerabilities and provide rapid worldwide deployment. The PACAF F-35A beddown would also provide a stabilizing presence within the region by providing efficient and effective response to threats, and undertake the Combat Air Force core competencies of air and space superiority, global attack, precision engagement, and agile combat support.

ES2.1 Purpose

To maintain capable ready forces required for national defense, the Air Force must integrate the F-35A mission while transitioning from the legacy-fighter aircraft programs. The purpose of the Proposed Action is to maintain efficient and effective combat capability and mission readiness in the PACAF AOR as the Air Force faces deployments across a spectrum of conflicts, while also providing for homeland defense. Beddown and operation of the F-35A at a PACAF AOR base would represent a major step toward this goal. This beddown action assures availability of combat-ready pilots in the PACAF AOR, flying the most advanced fighter aircraft in the world.

ES2.2 Need

The Secretary of the Air Force determined there was a need to locate F-35A aircraft in the PACAF AOR based on the following priorities:

- Support the Pacific rebalance as directed by the President and the Secretary of Defense to counter the threats arising in the Pacific arena;
- Support the location of robust fifth-generation aircraft capability to offset similar threats in the PACAF AOR;
- Support future significant peacekeeping requirements or conflicts that may occur in the Pacific region; and
- Provide adequate war-planning response times in the PACAF AOR.

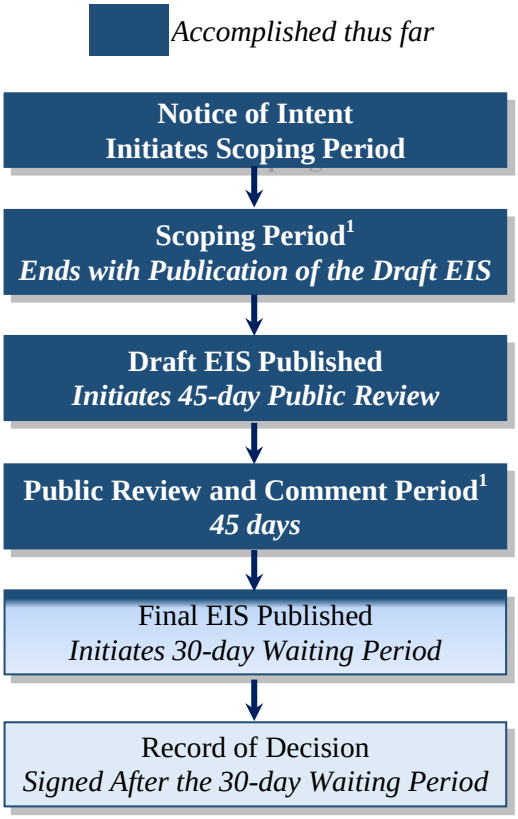
ES.3 THE ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The National Environmental Policy Act (NEPA) requires that a federal agency, when considering undertaking a major federal action, employ a systematic, interdisciplinary approach to: (1) analyze the potential environmental impacts of a proposed action, (2) consider alternatives to the proposed action, and (3) make an informed decision prior to implementing the action. This act applies to actions occurring in

the United States (U.S.) and its territories, Antarctica, and for actions within 12 nautical miles (about 14 miles) from U.S. shorelines.

The Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508), and the Air Force's regulations (32 CFR § 989) implementing NEPA, require the Air Force to consider potential environmental consequences of its proposed action early and concurrent with the initial project planning stages. Adherence to these regulations ensures the Air Force considers environmental impacts of its actions in planning and decision making, and provides an opportunity for public input into the decision-making process.

The Environmental Impact Analysis Process (EIAP), as contained in 32 CFR § 989, is the Air Force procedure for implementing NEPA. Through EIAP reviews, all information pertinent to the proposed action and reasonable alternatives, as well as the no-action alternative, are used to determine the appropriate level of NEPA analysis. For this Proposed Action, the Air Force determined the appropriate level of analysis was an EIS. The flow chart to the right identifies key milestones of the EIAP associated with the F-35A beddown proposal in the PACAF AOR.



[1]Opportunities for public involvement

ES.3.1 Streamlining the NEPA Process

In accordance with CEQ regulations implementing NEPA, and with the intent of reducing the size of this document, this EIS summarizes and incorporates by reference relevant material from other NEPA documents, as applicable.

ES.3.2 Scoping Process

Scoping began with publication of the Notice of Intent (NOI) in the *Federal Register* on March 5, 2015 (Volume II, Appendix A). Advertisements announcing the NOI and scoping meeting locations, dates, and times were placed in the *Fairbanks Daily News-Miner* (daily), *Delta Wind* (weekly), *Alaska Dispatch News* (daily), and the *Juneau Empire* (daily) newspapers at least a week prior to the scoping meetings. In daily newspapers, advertisements ran for three consecutive days and once in the weekly newspaper.

Scoping meetings were held in North Pole, Fairbanks, and Delta Junction on March 24, 25, and 26, 2015, respectively. In total, 195 people attended and 25 written comments were submitted at the scoping meetings. Another 45 comments were received up to publication of the Draft EIS. In general, the comments were supportive of basing the F-35A at Eielson AFB, although one commenter opposed the basing action in its entirety. During scoping issues of concern included: noise generated at the airfield by low-altitude aircraft, and in the airspace by higher-altitude aircraft creating sonic booms; the effects of noise to humans, wildlife, livestock, and quality of life; increased air emissions further deteriorating North Pole air quality; increased wildland fire danger in the Delta Junction area because of increased ordnance use; the effects of

aircraft-generated noise on recreating in the state and national parks; and how increased military air traffic could impact civil aviation in the region.

ES.3.3 Public Review and Comment Period

The public review and comment period began on September 4, 2015, with the Draft EIS Notice of Availability (NOA) published in the *Federal Register*. The Draft EIS was distributed for review and comment to government agencies, local organizations, Alaska Native tribal entities, members of the public who requested a copy, and to libraries in time to coincide with the NOA announcement. The Draft EIS was also available for review or download from the project website at https://www.PACAF-F35Aeis.com on September 1, 2015. The advertisements, as well as the NOA, supplied the dates, times, and locations of the hearing meetings that were held in North Pole, Delta Junction, and Fairbanks on September 21, 22, and 23, 2015, respectively.

The three hearing meetings were held in two concurrent formats: an open house with displays where the public could interact with members of the Air Force NEPA team, and the formal hearing where the public was given the opportunity to provide oral testimony on the Draft EIS. In total, 196 people attended the hearing meetings, 48 oral comments were recorded by a stenographer, and the Air Force received 20 written comments. Additionally, 12 emailed comments were submitted through the project website and nine letters were received over the 45-day comment period. The public review and comment period ended on October 20, 2015.

Copies of all comments recorded and received during the 45-day public comment and review period are presented in Volume II, Appendix G and can be viewed on the project website at https://www.PACAF-F35Aeis.com. They are also found in the hard copy Final EIS and on the CD accompanying the Executive Summary. The following is a summary of comments received at each of the hearings. Written comments received after the hearings, through email and the U.S. Postal Service, echoed the comments received at the hearings.

For North Pole, of the 11 oral comments delivered, all but one was in support of basing the F-35As at Eielson AFB. Most found that the economic benefit of having the increased Air Force personnel and their dependents far out-weighed any noise issues. Commenters asked that we address issues such as noise reduction in schools (see Sections 4.3.3 and 4.9.3), concerns with the effects increased security for areas that are public (see Section 4.5.2.2, *Fire Risk and Management*), and air quality resulting from an increase in the population (see Section 4.4.2.1). There was also a comment that expressed concern for sonic booms and their effect on wildlife (see Section 4.3.2.2 and Appendix E, Section E2.14.2). Another commenter requested discussion that is more detailed on whether there is suitable rental housing in the area. For example, are the units close enough to the base, are there enough affordable housing units in the area to support construction employees in the short term and an increase in military and civilian personnel the in the long term (see Section 4.6.2.1).

At Delta Junction, four individuals provided oral comments and two submitted written comments. One commentor was concerned about the increase in greenhouse gasses (see Section 5.2.1.3) and asked if our analysis included other sources of emissions in addition to those of the F-35A (see Appendix F). That commentor also stated concerns with an increase in sonic booms (see Section 4.3.2.2). Another commentor suggested we establish a 30-mile radius sonic bubble around Delta Junction as a solution for sonic boom noise (see Appendix G, comment response AA-3). The last commentor wanted to know how the Air Force and civilian aircraft could interact together (see Section 4.2.2.3). The written comments

were supportive; however, there was concern regarding safety and that the Automated Surface Observation System office at Fort Greely should continue to be staffed to ensure aircraft safety with increased air traffic in the region (see Appendix G, comment response SA-7). There was one other written comment from the City of Fairbanks Mayor expressing his support of the basing action.

The Fairbanks hearing was the most heavily attended, with 33 oral comments and 15 written comments provided by the attendees. The oral comments were mostly supportive, endorsing the basing of aircraft at Eielson AFB and appreciation for the Air Force's recognition of Alaska's strategic value. The office of economic development asked the Air Force to be forthcoming with the construction schedule so that there would be funding available for the growth associated with the Proposed Action. One commentor was concerned about the Draft EIS not assessing the impact of using Historically Underutilized Business contracting (see Appendix G, comment response SO-3). Another commentor suggested that the Proposed Action would improve water and wastewater utility services (see Appendix G, comment response WR-2). A commentor was concerned that the existing Special Use Airspace Information System would be inadequate to support the airspace expansions and increased use (see Appendix G, comment response AA-5). There were also several oral comments opposing the Proposed Action. All 15 written comments were in support of basing F-35As at Eielson AFB.

Letters, postmarked after the close of the comment period, were received from Governor Bill Walker, State Representative Gabrielle LeDoux, State Representative Jim Colver, State Senator Click Bishop, and the Alaska Congressional Delegation comprising Senators Lisa Murkowski and Dan Sullivan, and Representative Don Young. All stated their support for basing the F-35A at Eielson AFB.

While all comments submitted were considered by the Air Force, only substantive comments are addressed. Substantive comments are those that identify issues and concerns related to the Proposed Action and No-Action Alternatives. Non-substantive comments are those that only express a conclusion, an opinion, or a vote for or against the proposal itself; or that otherwise state a personal preference or opinion.

ES.4 ALTERNATIVE IDENTIFICATION

Based on strategic requirements, site survey results, and application of selection standards, the Secretary of the Air Force identified Eielson AFB, located in the interior of Alaska, as the preferred location and only location for basing two F-35A operational squadrons in the PACAF AOR, and directed that only two alternatives be carried forward for analysis in this EIS:

- *Proposed Action Alternative:* Beddown two squadrons of F-35A aircraft at Eielson AFB as an addition to all existing mission activities.
- *No-Action Alternative*: F-35A squadrons would not be located at Eielson AFB or within the PACAF AOR at this time; existing flight missions at the base would remain unchanged and already planned construction and infrastructure upgrades, not associated with the F-35A, would be undertaken.

The No-Action Alternative is discussed first to provide a context for comparing the changes that would occur under the Proposed Action of basing two F-35A squadrons at Eielson AFB.

ES.5 NO-ACTION ALTERNATIVE

Per CEQ regulations (40 CFR §1502.14(d)) implementing NEPA, analysis of a No-Action Alternative is required. "No action" means that the Proposed Action (i.e., the F-35A beddown) would not take place, and the resulting environmental effects from not taking the action are compared to the effects of implementing the Proposed Action. Under the No-Action Alternative for this EIS, no F-35A beddown would occur at Eielson AFB or within the PACAF AOR at this time, thus no F-35A associated on-base construction or personnel increases would be implemented. Major flying exercises and routine training would continue to be supported at Eielson AFB.

The 354 FW is the host unit at Eielson AFB with the mission to prepare aviation forces for combat, deploy airmen in support of global operations, and enable the staging of forces. To accomplish that mission, the 354 FW implements flying operations, mission support, maintenance, and medical care functions. Located adjacent to the northern portion of the Joint Pacific Alaska Range Complex (JPARC) airspace, the 354 FW's 18th Aggressor Squadron familiarizes combat-ready forces with the tactics used by potential adversaries.

ES.5.1 Personnel

The number of military and civilian personnel fluctuates at the base due to the constant departure and arrival of personnel over a year. However, as of December 2014, there was a total of 4,986 military, civilians, and contractor personnel and dependents working and/or living on Eielson AFB. The 354 FW accounts for the majority of individuals on base, with tenant units accounting for 415 positions.

ES.5.2 Facilities and Infrastructure Construction and Modifications

The airfield is the dominant feature within the base boundaries, with a 14,530-foot long runway and associated ramps and taxiways that occupy the west side of the base. The runway parallels Richardson Highway, which runs through the base. Most of the Eielson AFB operational and industrial areas are immediately adjacent to the airfield on the east side of the flight line. Due to its isolation and extreme climate, Eielson AFB provides its own power generation, steam heat production, potable water provision, wastewater treatment and disposal, as well as clean construction material fill sites. The base also provides a wide range of community facilities including about 900 housing units for families and 450 dormitory rooms for unaccompanied military personnel; educational facilities spanning from kindergarten through high school; a medical center, chapel, commissary, and base exchange; various commercial-services businesses; as well as year-round physical fitness and recreational facilities.

Under the No-Action Alternative, the base has planned and programmed numerous facility and infrastructure improvements up to calendar year 2021. This time period was identified because it represents the conditions that would be present at the time the F-35A proposed beddown would be completed. Examples of these improvements include repairs to the central heat and power plant, consolidation of munitions on Quarry Hill, and construction of Red Flag-Alaska visiting quarters.

ES.5.3 Airfield and Airspace Operations

Airfield Operations. Currently, 21 F-16s, 9 KC-135s, and 2 HH-60s are based at Eielson AFB. Because the base supports Red Flag-Alaska, Northern Edge, and other major flying exercises, more than a dozen types of transient aircraft (i.e., other U.S. major units and allied nation visitors not based at Eielson AFB) temporarily operate from the base during these exercises. In calendar year 2014, 18,963 annual airfield operations were conducted by based and transient aircraft at Eielson AFB and it was assumed that this tempo would continue under the No-Action Alternative. Aircraft operations occur during both "environmental" daytime and nighttime hours. Environmental daytime is defined as 7:00 a.m. to 10:00 p.m. and nighttime is defined as 10:00 p.m. to 7:00 a.m. Environmental night represents a period when the effects of noise on people are accentuated and receives special consideration. Of the total airfield operations, approximately 8 percent (or 1,466) occur during environmental nighttime hours.

Airspace Operations. Aircraft operating out of Eielson AFB primarily use the northern portion of the JPARC Special Use Airspace (SUA) and range assets (the gray area identified in Figure ES-1). On average, aircraft operate in northern JPARC airspace 240 days a year. Of this total, up to a maximum of 60 days, typically from the spring to early fall, support a higher operational tempo due to major flying exercises such as Red Flag-Alaska and Northern Edge. In the other overland JPARC SUA, i.e., Galena, Naknek A/B, Stony A/B, and Susitna Military Operations Areas (MOAs) and their overlying Air Traffic Control Assigned Airspace (ATCAAs), the primary user is Joint Base Elmendorf-Richardson. The overwater warning area 612 (W612) is used by Joint Base Elmendorf-Richardson aircraft chiefly during Northern Edge. Throughout JPARC airspace and ranges authorized for such use, chaff and flares are deployed in air combat exercises as countermeasures to air- or ground-based threats. While most air-to-ground training is simulated, where nothing is released from the aircraft, there is still a need to conduct realistic ordnance delivery. These operations are conducted in authorized JPARC restricted airspace and ranges.

ES.6 PROPOSED ACTION ALTERNATIVE

The primary beddown requirements that drive the analysis of environmental impacts for this Proposed Action are aircraft operations, construction, and personnel. The resources impacts by each of these requirements are identified in Table ES-1.

Table ES-1. Proposed Action Elements Impacting Resources

Resource Category	*Aircraft Operations*	*Construction*	*Personnel*
Airfield and Airspace Operations and Management	✓	✓	-
Acoustic Environment	✓	✓	-
Air Quality	✓	✓	-
Safety	✓	-	✓
Socioeconomics	✓	✓	✓
Land Management	✓	-	✓
Cultural Resources	✓	✓	-
Environmental Justice and Protection of Children	✓	✓	✓
Natural Resources	✓	✓	-
Earth Resources	-	✓	-
Water Resources	-	✓	✓
Hazardous Materials, Hazardous Wastes, Toxic Substances, and Contaminated Sites	✓	✓	✓
Recreational and Visual Resources	✓	✓	✓

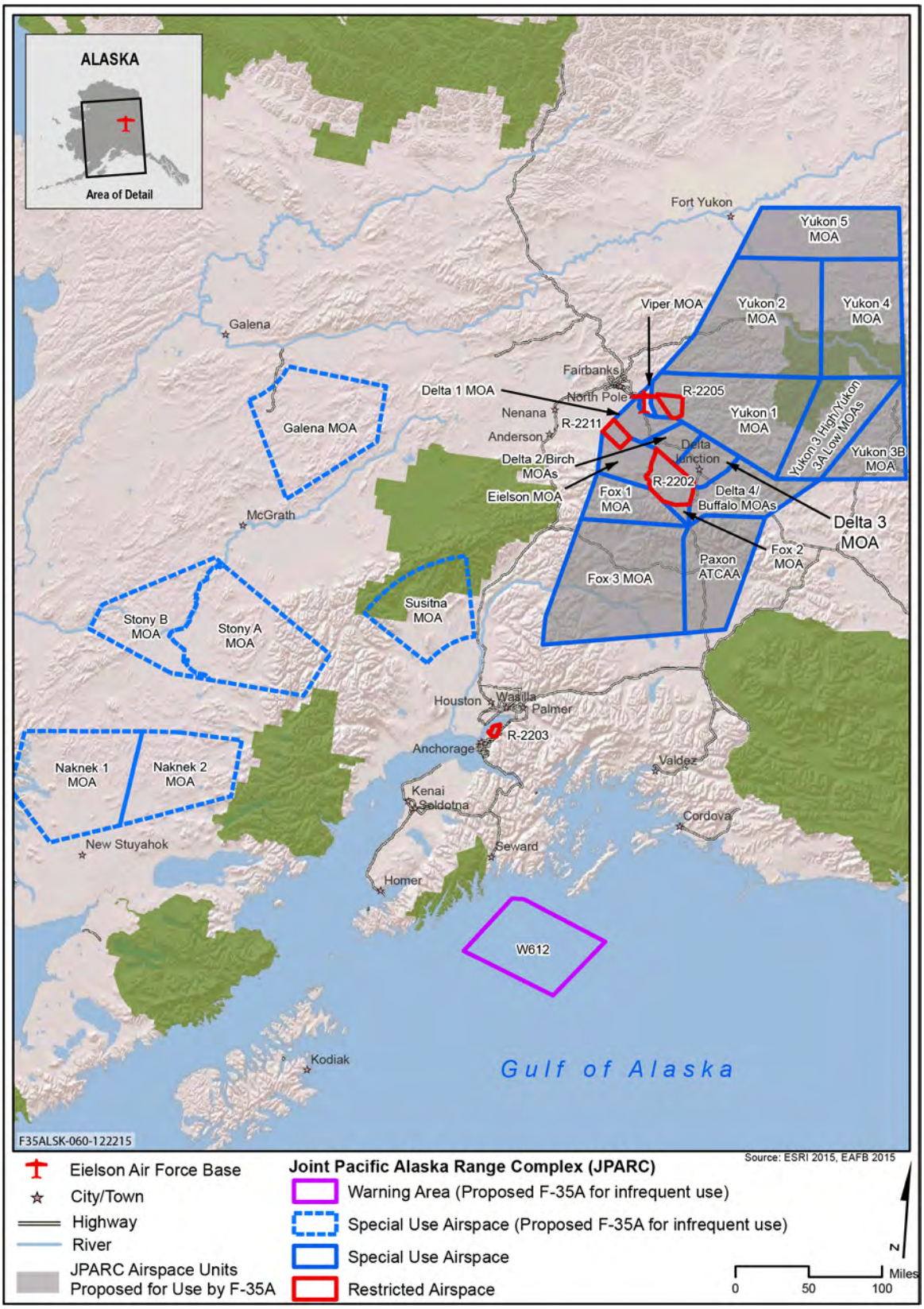


Figure ES-1. Joint Pacific Alaska Range Complex

ES.6.1 Personnel

Basing two F-35A squadrons and associated support and maintenance functions is expected to add 1,563 military and civilian personnel to the base by fiscal year 2020 (FY20), when both squadrons are expected to be fully operational. This would increase the total authorized active-duty military population of the 354 FW to 2,981 (Table ES-2). Civilian and contractor personnel would increase by 487 people, for a total of 1,256 and military dependents would increase by 1,202, for a total of 3,099. The tenant unit population would not change, and remain at 415 authorized personnel. Total base population would increase by an estimated 2,765 individuals to 7,751, or grow by approximately 55 percent when compared to the No-Action Alternative. Personnel increases would be incremental, happening over 2 to 3 years, typically preceding the scheduled delivery of the aircraft by several months.

Table ES-2. Eielson AFB Proposed Action Alternative Personnel and Dependents

Category	*No Action*	*Proposed Action Alternative*	*Total Base*
Military			
Officer	168	95	263
Enlisted	1,737	981	2,718
Subtotal	***1,905***	***1,076***	***2,981***
Civilians			
Appropriated Fund	360	228	588
Non-Appropriated Fund	186	118	304
Contractors	223	141	364
Subtotal	***769***	***487***	***1,256***
Military Dependents			
Spouses	1,063	674	1,737
Children	834	528	1,362
354 FW Subtotal	***1,897***	***1,202***	***3,099***
Tenant Unit Personnel			
Military and Civilian	415	0	415
Eielson Population Total	**4,986**	**2,765**	**7,751**

ES.6.2 Facility and Infrastructure Construction and Modifications

New and modified infrastructure and facilities would be required at Eielson AFB to support the proposed beddown of up to 54 primary and backup F-35A aircraft (Table ES-3). Under the Proposed Action Alternative, the 18th Aggressor Squadron would move to the former A-10 operations area. Several facilities would be renovated or constructed in the central area of the base, and munitions storage facilities would be added in Quarry Hill (Figure ES-2). However, the majority of F-35A operations and maintenance facilities would be located in the southern end of the runway at the South Loop (Figure ES-3). Several construction projects had to be placed within the 100-year floodplain or in wetland areas. No other practicable alternative locations were identified because of the need to place facilities outside explosive safety arcs, and the requirement for adjacency to the flight line. Additionally, the South Gate would be reopened to divert construction traffic from and minimize congestion at the North Gate. With this reopening, the South Gate vehicle inspection area would be expanded to support commercial and construction equipment, as well as new entry and merge lanes established on both sides of Richardson Highway to minimize congestion along the highway.

Table ES-3. Proposed Action Alternative Construction, Additions, Alterations/Renovations, and Demolition

Proposed Start Dates	*Action*	*Site Number*
FY16	Renovate Building 4110 (B-4110): 18 Aggressor Squadron Operations and Aircraft Maintenance Unit	22
FY16	Construct 6-Bay Flight Simulator Facility	12
FY16	Reopen/Expand South Gate (for construction traffic)	26
FY17	Construct 4-Bay Hangar/Propulsion Maintenance/Corrosion Control Personnel Dispatch (Squadron 1)	1
FY17	Construct 4-Bay Hangar/Squadron Operations/Aircraft Maintenance Unit (Squadron 2)	35
FY17	Construct 16-Bay, 16-Aircraft Weather Shelter (South Loop)	5
FY17	Construct 16-Bay, 16-Aircraft Weather Shelter (South Loop)	3
FY17	Construct 6 Munitions Storage Igloos (Quarry Hill)	17
FY17	Construct new Missile Maintenance Facility	20
FY17	Add/Alter B-4280: Field Training Detachment Unit	13
FY17	Demolish B-1303: Missile Maintenance Shop	48
FY17	Renovate B-1326: Munitions Line Delivery	41
FY17	Renovate B-1307/B-1338: F-35 Aircraft Maintenance Unit /Weather Shelter (Squadron 1)	36/42
FY17	Renovate B-1337: F-35 Squadron Operations (Squadron 1)	2
FY17	Renovate B-3426: Base Supply (enlarge classified storage, larger doors)	11
FY17	Renovate B-1341: Egress Maintenance Shop	6
FY17	Renovate B-1335: 4-Bay Weather Shelter (fire suppression, floors, lights)	38
FY18	Add/Alter B-1324: Munitions Inspection Shop	40
FY18	Construct 6-Bay R-11 Refueling Truck Garage	27
FY18	Construct South Loop Aerospace Ground Equipment Facility with Fill Stand	30
FY18	Construct South Heat Plant	10
FY18	Construct New Consolidated Munitions Operations Facility	39
FY18	Construct New Alternate Mission Equipment Facility	24
FY18	Renovate B-1209: Aerospace Ground Equipment Shop/Covered Storage	37
FY18	Construct new Operations Support Squadron Facility; alter B-1215 for Base Operations	23
FY18	Renovate B-1232: Enlarge Wheel & Tire Shop in Nose Dock 7	16
FY18	Renovate B-3462: Munitions Flight (alter to accommodate additional personnel)	25
FY18	Renovate B-1306: Aerospace Ground Equipment Covered Storage (North Bays)	30
FY18	Renovate B-1338: Aircraft Maintenance Hangar	42
FY18	Renovate B-1340: Weapons Load Training (add fire suppression and alter to accommodate additional personnel)	34
FY18	Renovate B-1344: Fuel Cell Maintenance Facility (alter to accommodate additional personnel)	33
FY18	Renovate B-1346: Metals Tech in Jet Engine Intermediate Maintenance Facility (alter to accommodate additional personnel)	7
FY18	Renovate B-1347: Maintenance Group (alter to accommodate additional personnel)	15
FY18	Renovate B-1353: Armament Systems Maintenance Facility for Alternate Mission Equipment and Metals Tech	9
FY18	Add/Alter B-6385: Munitions Inspection Shop	44
FY18	Renovate B-1141: Maintenance Operations Center (alter to accommodate additional personnel)	29
FY18	Add/Alter B-6389: Outdoor Arms Range Add Two Firing Points	45
FY18	Construct Flight Kitchen	32
FY18	Construct School Age Facility	31
FY18	Renovate B-3134: Security Forces Facility	28
FY18	Demolish B-3303: School Age Facility	46
FY18/19	Renovate B-2262 and B-2264: Dormitories	49
FY19	Construct 14-Point Combat Arms Training and Maintenance Range	14
FY19	Construct 200-Person Dormitory	18
FY19	Demolish B-5313: Youth Center	47
FY19	Add/Alter B-3349: Medical Clinic (alter to accommodate additional personnel)	43

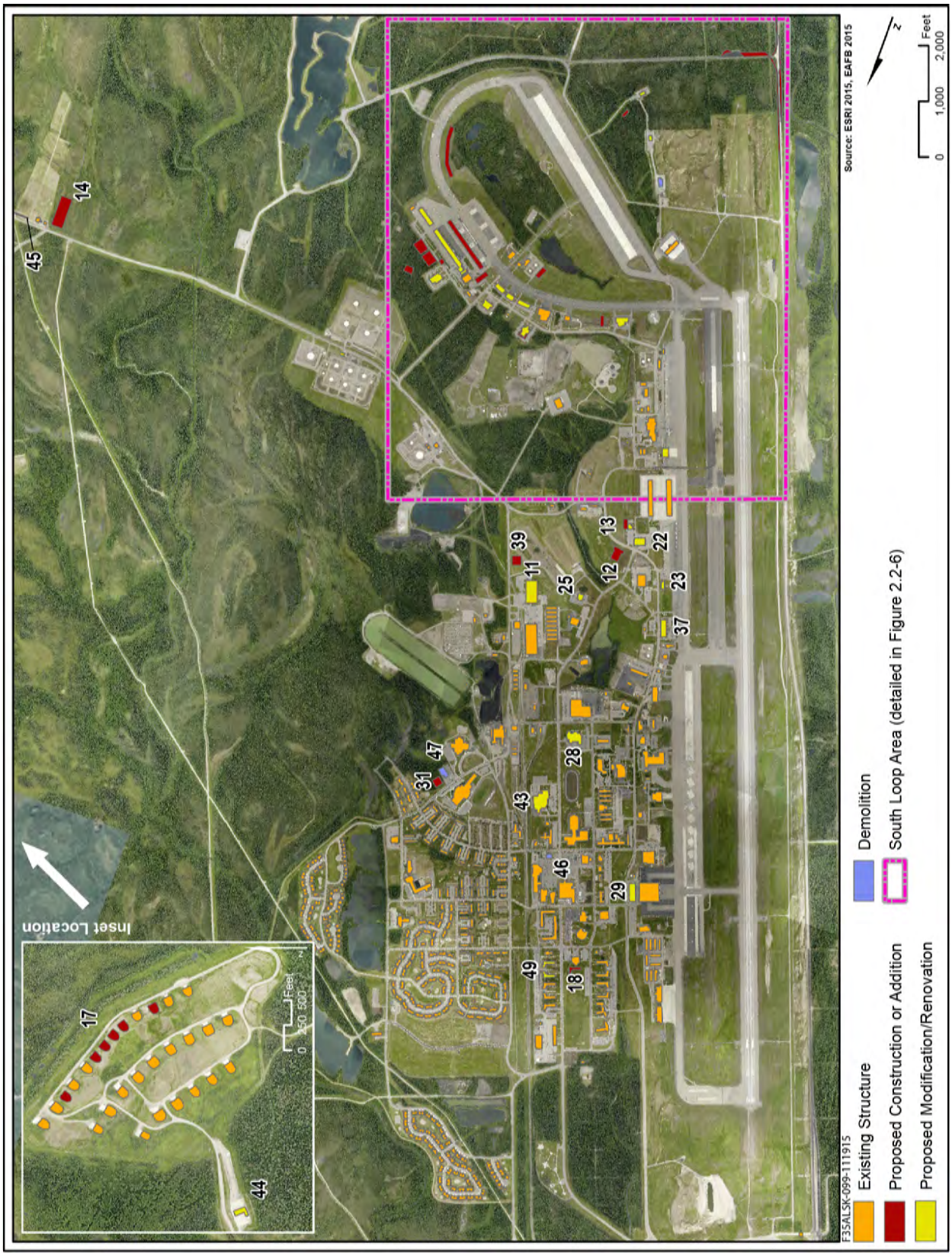


Figure ES-2. Proposed Action Alternative Basewide Facility and Infrastructure Construction and Modification Plan

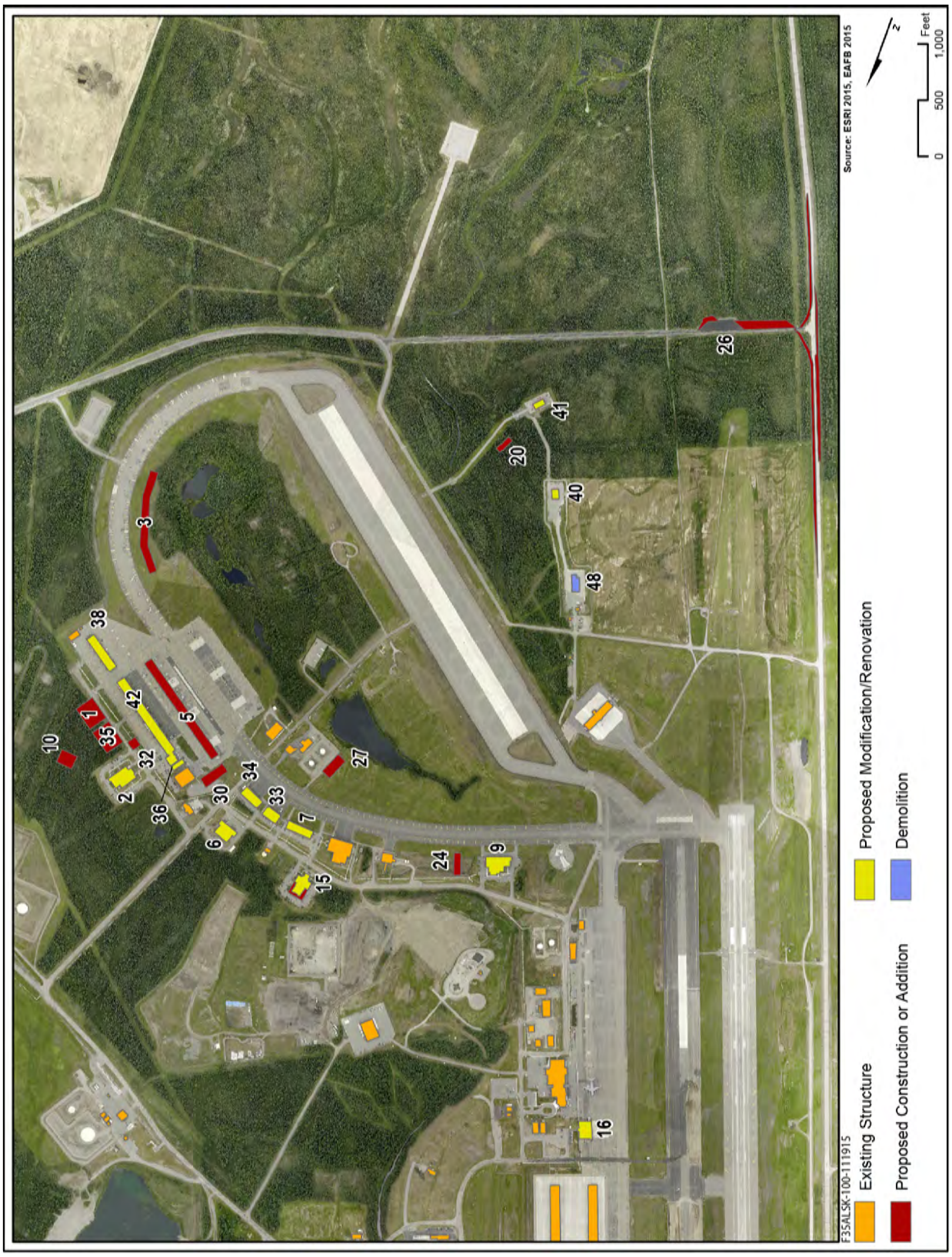


Figure ES-3. Proposed Action Alternative Southern Facility and Infrastructure Construction and Modification Plan

Proposed construction, additions, interior renovations, exterior alterations, and infrastructure improvements would occur between FY16 and FY20. Total acreage disturbed, which includes equipment laydown areas, construction clearing/grading, landscaping, infrastructure improvements, and construction entrances, would be approximately 66 acres, of which approximately 21 acres would be converted to impervious surfaces. Existing utility corridors would be used to the greatest extent possible; any fill needed for facility construction would come from existing on-base resources; clean demolition material (e.g., concrete and asphalt) would be disposed at on-base sites; and the base has disposal sites permitted to accept materials that contain asbestos. All construction material (wood, metal, and concrete) is locally available or can be ordered and delivered.

ES.6.3 Airfield and Airspace Operations

Airfield Operations. Under the Proposed Action Alternative up to 54 aircraft would be based at Eielson AFB, bringing the total number of based aircraft at Eielson AFB to 86. By completion of the beddown process (anticipated by FY21), F-35A aircraft would annually contribute 26,106 additional airfield operations (i.e., takeoffs, landings, low approaches, and other pattern work at the airfield) at Eielson AFB. When added to the baseline of 18,963, airfield operations would more than double to 45,069. Please note that these total airfield operations include based and transient aircraft at Eielson AFB. Transient aircraft are those that visit on a temporary basis, participate in major flying exercises, travel through the area, or land at the airfield for emergency, weather, or other contingencies. The existing runway at Eielson AFB is more than sufficient to meet this increased use without requiring any runway modifications or construction.

Aircraft operations fluctuate over the year, and the busiest months are from April through October when the major flying exercises occur. Operations differ according to the number of aircraft that participate in major flying exercise (every exercise varies), the number of based aircraft that are deployed to different locations for reasons such as combat and/or training, and fiscal constraints that dictate how far aircraft can travel to undertake training. These are just a few reasons why specific operations cannot be identified for each month or for particular seasons. Therefore, annual average operations are used to evaluate potential impacts in this EIS. Table ES-4 provides the annual number of airfield operations projected under the Proposed Action Alternative. Existing standard departure and arrival routes, as well as noise abatement procedures (e.g., quiet hours, engine runup times and locations) would be used by the F-35A. Once the beddown is complete, approximately 96 percent (or 43,450) of the total airfield operations would occur during the environmental daytime hours (i.e., 7:00 a.m. to 10:00 p.m.) and approximately 4 percent (or 1,619) during environmental nighttime hours (10:00 p.m. to 7:00 a.m.). Environmental night represents a period when the effects of noise on people are accentuated and a 10-decibel penalty is applied in the noise modeling. F-35A airfield operations would result in a 138-percent increase (or 25,953) in daytime operations and a 10-percent increase (or 153) in the overall environmental nighttime operations.

Table ES-4. Proposed F-35A Annual Airfield Operations[1] at Full Operational Capability

Details of Airfield Operations	*F-35A Airfield Operations*	*Based Aircraft Operations*	*Total Airfield Operations*
Day (7:00 a.m. to 10:00 p.m.)	25,953	17,497	43,450
Night (10:00 p.m. to 7:00 a.m.)	153	1,466	1,619
Total	**26,106**	**18,963**	**45,069**

Note:
[1]An *airfield operation* represents the individual portion of a flight in the base airfield environment; for instance, one aircraft taking off, doing an approach and departure, and then landing are four airfield operations but these all comprise one sortie performed by a single aircraft.

Airspace Operations. Aircraft operating out of Eielson AFB primarily use the northern portion of the JPARC SUA and range assets. On average, aircraft operate in the JPARC airspace 240 days a year. F-35As from Eielson AFB would primarily operate in the northern portion of JPARC airspace, in the MOAs, ATCAAs, and Restricted Areas in the immediate vicinity of Eielson AFB (Figure ES-4). The F-35As could also fly throughout the entirety of JPARC SUA; however, these operations would be minimal. If operations exceed existing evaluated levels, then the appropriate NEPA documentation will be undertaken and public involvement invited. No changes in training airspace configurations are proposed for this action. Table ES-5 summarizes proposed annual operations that would be conducted at completion of the beddown in early FY21. These numbers are based on the utilization rate for the F-35A (or the number of times one F-35A can operate on a typical day) and the type of training that is required for combat readiness. For F-35A operations (the third column in Table ES-5), within each of the northern JPARC airspace units, 99 percent of operations would occur between 7:00 a.m. and 10:00 p.m. (or environmental daytime hours) and 1 percent would occur between 10:00 p.m. and 7:00 a.m. (or environmental nighttime hours). Total projected annual average operations are provided in column four.

Table ES-5. Proposed F-35A Annual Operations in Northern JPARC Airspace

Airspace Unit	*No Action (calendar year 2021)*	*F-35A Proposed (calendar year 2021)*	*Total*
Birch MOA	4,672	433	5,105
Buffalo MOA	4,672	433	5,105
Delta 1 MOA[1]	2,908	690	3,598
Delta 2 MOA[1]	3,618	690	4,308
Delta 3 MOA[1]	3,618	690	4,308
Delta 4 MOA[1]	3,618	690	4,308
Delta ATCAA	4,808	760	5,568
Eielson MOA/ATCAA	7,034	3,387	10,421
Fox 1 MOA/ATCAA	7,056	3,387	10,443
Fox 2 MOA	6,749	3,387	10,136
Fox 3 MOA[2]/ATCAA	6,507	3,387	9,894
Paxon High MOA/ATCAA[2]	4,701	3,387	8,088
Paxon Low MOA[1, 2]	3,618	920	4,538
Yukon 1 MOA/ATCAA	5,568	2,540	8,108
Yukon 2 MOA/ATCAA	5,568	2,540	8,108
Yukon 3A Low/3 High MOAs/ATCAAs	3,759	2,540	6,299
Yukon 3B MOA[1]	3,417	690	4,107
Yukon 4 MOA/ATCAA	3,447	1,270	4,717
Yukon 5 MOA/ATCAA[1]	3,417	690	4,107
Viper B MOA/ATCAA	5,568	2,540	8,108
R-2202A/B/C/D	10,168	3,387	13,555
R-2205	6,334	2,540	8,874
R-2211	3,031	3,387	6,418
Blair ATCAA	3,898	3,387	7,285

Source: Air Force 2015a.
Notes:
[1]Operations in these airspace units conducted only during major flying exercises.
[2]If the lower floors of these MOAs are not charted by the FAA, then the F-35As would conduct operations within the higher floor configurations of the Fox 3 MOA and Paxon ATCAA. Total operations would not change and would be distributed similarly as presented above. Aircraft would just not fly lower, but maintain operations within the higher constricts of the airspace.

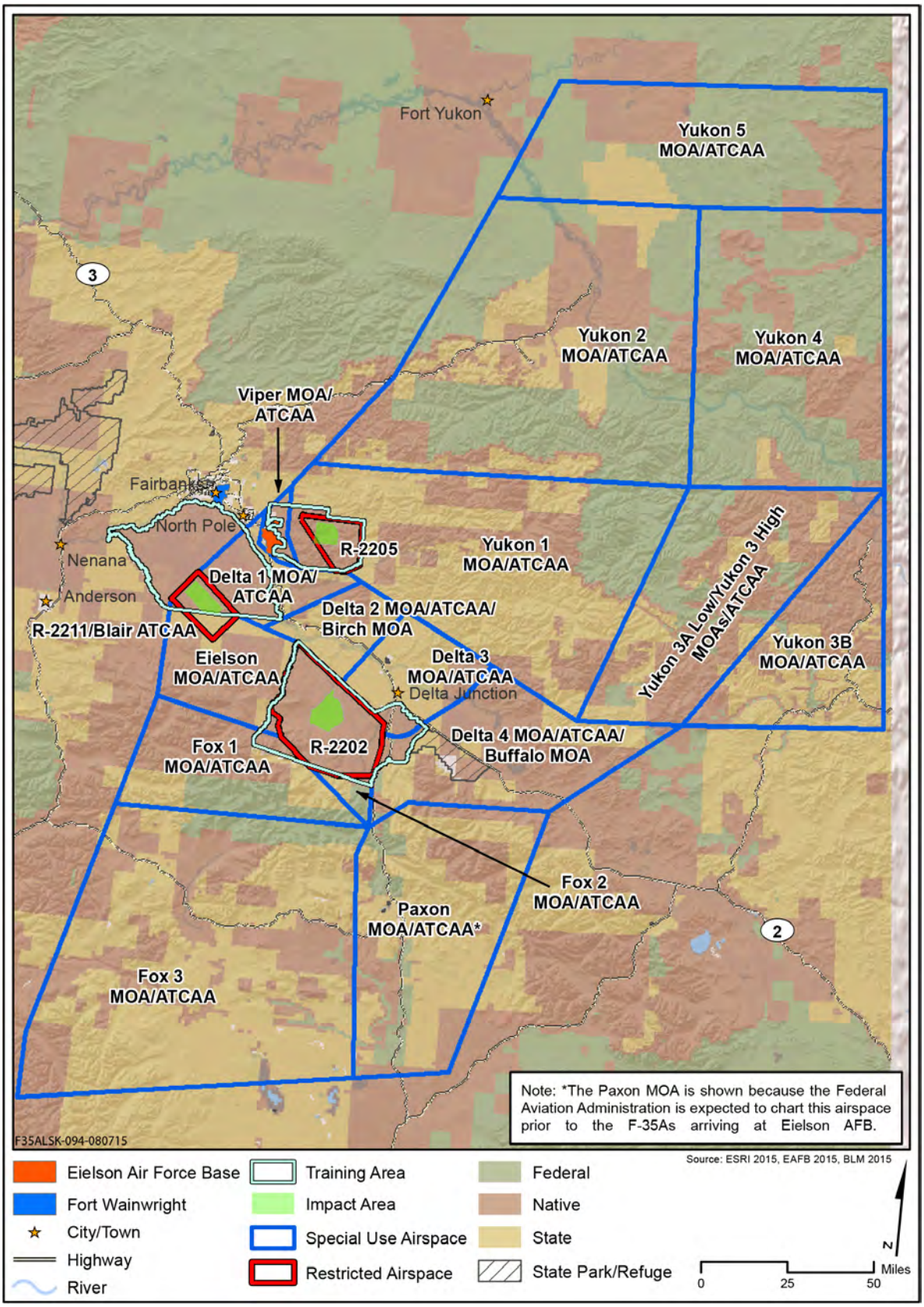


Figure ES-4. Joint Pacific Alaska Range Complex Airspace used by Eielson AFB Aircraft

The F-35As would occasionally use existing Military Training Routes (MTRs). As is done currently for aircraft operating in the MTRs, the F-35As would fly according to the parameters outlined in the 2008 611th Air Operations Center Finding of No Significant Impacts for the final Military Training Routes (Alaska) Environmental Assessment, whereby an average of eight operations per day (by any aircraft) can fly in any of the MTRs. If F-35As use MTRs for transit to other locations, the analyses in this EIS assume that the use would fall within the eight operations currently authorized for use by all aircraft. As F-35A operations would fall within the parameters already analyzed in the 611th Environmental Assessment, there would be no additional environmental impacts from MTR use by F-35As that have not already been analyzed in the 611th Environmental Assessment.

Due to the F-35A mission and the aircraft's capabilities, the Air Force anticipates approximately 10 percent of the time spent in air-to-air combat training, would involve supersonic flight for a maximum of 2 to 3 minutes per sortie. Supersonic flight would normally be conducted above 15,000 feet mean sea level (MSL), with 90 percent occurring above 30,000 feet MSL. On occasion, the F-35A aircraft may conduct supersonic flight below 15,000 feet MSL to accommodate mission and training needs; however, these would only be done in airspace already authorized and approved for supersonic flights at the lower altitudes.

Although the F-35A's stealth features significantly reduce its detectability, pilots must train to employ defensive countermeasures. Flares would be used only in approved JPARC airspace at the altitudes and seasons designated in the 11th Air Force Alaska Airspace Handbook and in accordance with the F-35A combat readiness training requirements. It is estimated that annually, F-35A pilots would deploy up to 27,060 flares; this would double current flare use within northern JPARC airspace.

The F-35A has the requirement and capability to perform air-to-ground missions (i.e., deploying ordnance and munitions from the aircraft to targets on the ground) to maintain combat readiness. For the F-35A, air-to-ground training represents approximately 60 percent of its training program, with the air-to-air mission accounting for the remaining 40 percent. While most air-to-ground training would be electronically simulated, where no ordnance or munitions are released from the aircraft, there is a need to conduct realistic ordnance delivery at approved JPARC ranges. Therefore, F-35A aircraft would primarily operate in northern JPARC restricted airspace (i.e., R-2202, R-2205, and R-2211) and at ranges (i.e., Oklahoma, Stuart Creek, and Blair Lakes Impact Areas) approved for live-fire and inert ordnance delivery.

It is anticipated that under the Proposed Action Alternative, F-35A pilots would annually deploy, in total, 68 to 75 live ordnance, and from 68 to 150 inert ordnance onto existing ranges. This represents an increase of 225 more bombs to the training areas. Because the F-35A also carries an internal 25-millimeter cannon, occasional tactical strafing training would be required. Strafing involves flying toward and firing at a prescribed strafing target for a short burst of time. The F-35A has a capacity of 180 rounds, and the four times per year that live strafing would occur; a total of 34,560 rounds would be expended. As is the case for air-to-air and air-to-ground ordnance training, strafing activities must follow specific safety procedures and be employed only on approved JPARC ranges and targets.

ES.7 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION ALTERNATIVE

ES.7.1 Airfield and Airspace Operations and Management

***Base*:** In early FY21, with all F-35A aircraft at the base, the added activity would raise total annual airfield operations by approximately 138 percent, or by 26,106 operations. Even though total operations would more than double, this increase would not affect the airfield or surrounding terminal airspace management and use within the local air traffic environment. Eielson AFB was surveyed for the F-35A beddown, and the runway and terminal airspace capacity were found to be adequate for the additional annual airfield operations. No changes to the Eielson AFB terminal airspace or base arrival and departure procedures would be required to accommodate F-35A aircraft performance or operations. The increased operations would not exceed the capabilities of Eielson AFB Approach Control or its control tower for handling air traffic within the local airspace. There are no adverse impacts to the Eielson AFB airfield and adjacent terminal airspace structure or management.

***Airspace*:** Under the Proposed Action Alternative, F-35A operations would not alter management or current or planned structure of northern JPARC restricted areas, MOAs, and overlying ATCAAs. The F-35A would fly mission profiles similar to those flown by F-16s. The F-35A training activities would occur throughout the restricted airspace and ranges for air-to-ground training and the numerous MOAs and ATCAAs would continue to be used for air-to-air combat training and exercises. There would be no adverse impacts to northern JPARC airspace management. Adherence to all Federal Aviation Administration Visual Flight Rules, 11th Air Force (the JPARC managing entity) flight limitations (as prescribed in the 11th Air Force Alaska Airspace Handbook), and established communication procedures would not introduce adverse impacts to civil and commercial aviation activities.

Ongoing interaction between Eielson AFB, the Alaska Civil/Military Aviation Council, and state and federal agencies, as well as continued use of the Special Use Airspace Information Service (SUAIS), ensures continued compatibility of military and commercial/civil aviation in the affected environment of Eielson AFB and JPARC airspace. No adverse impacts to civil and commercial aviation activities are anticipated under the Proposed Action Alternative.

ES.7.2 Acoustic Environment

***Base*:** Under the Proposed Action Alternative, the 65 decibels A-weighted (dB) Day-Night Average Sound Level (DNL) contour would extend past the northern base boundary into the town of Moose Creek by nearly 1 mile and to the west by approximately 1,900 feet. Figure ES-5 presents the noise contours generated by the No-Action Alternative and Figure ES-6 presents those generated under the Proposed Action Alternatives. The 70 dB DNL contour would not extend beyond the base except at the western boundary by approximately 800 feet. When compared to the No-Action Alternative, off base, there would be approximately 865 more acres and 73 more households, to the north and west of the base, which would experience an increase in DNL between 65 and 70 dB. Ten additional acres would newly experience DNL between 70 and 75 dB to the west, but no households were identified in this area.

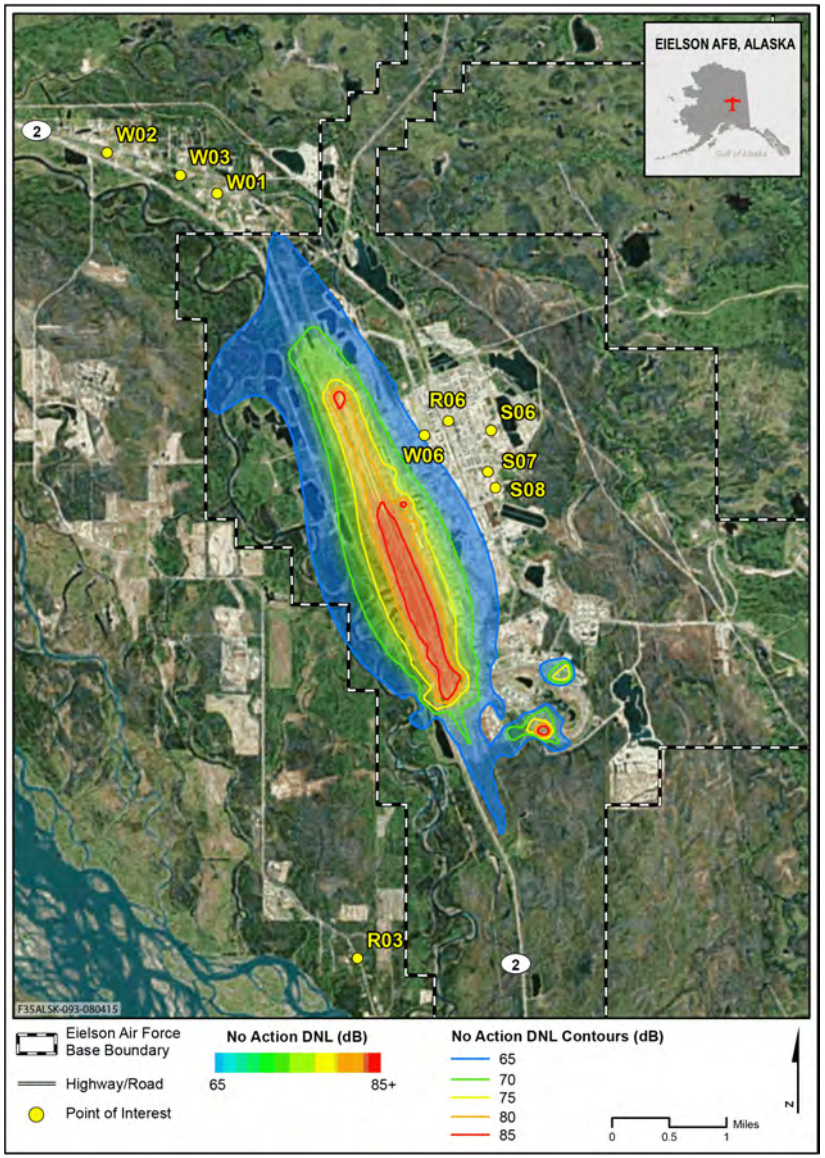


Figure ES-5. No-Action Alternative 65 to 85 dB DNL Contours

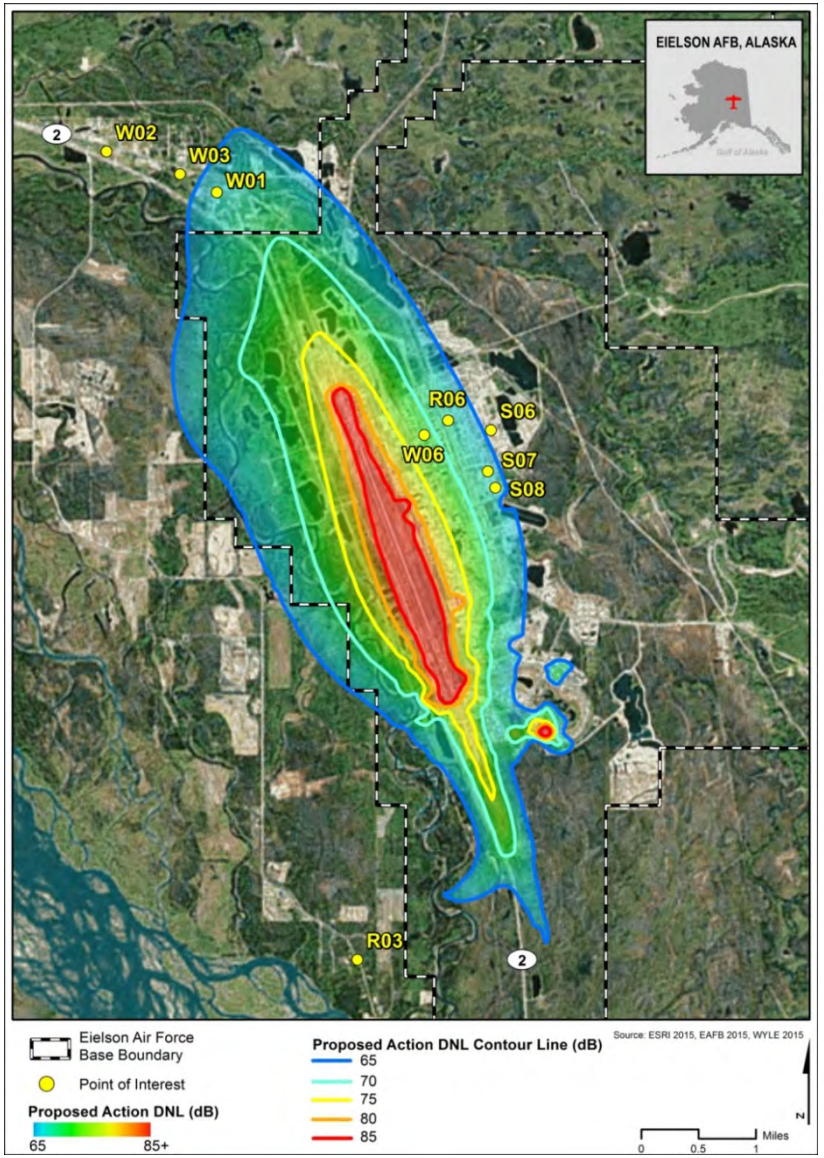


Figure ES-6. Proposed Action Alternative 65 to 85 dB DNL Contours

Population

Under the Proposed Action Alternative, 178 more people in Moose Creek would experience DNL between 65 and 70 dB. On base, approximately 860 more military personnel in dormitories would experience DNL between 70 and 75 dB, identified as Point of Interest (POI) W06 in Figure ES-6. There would be 1,382 military personnel and their dependents, residing in 512 on-base residences, newly exposed to DNL between 65 and 70 dB in the housing area (R06).

Table ES-6 shows DNL for representative POIs under the Proposed Action Alternative; Figure ES-6 identifies the POIs affected by noise levels greater than or equal to 65 dB DNL. Five locations would experience DNL greater than or equal to 65 dB, compared to one under the No-Action Alternative. Under the Proposed Action Alternative, one location would be off base at the Moose Creek Baptist Church (W01), which would experience an increase in DNL of approximately 5 dB. On base, DNL at two schools (S07 and S08) would increase by an estimated 5 dB DNL, to a projected DNL of 66 dB, and the residential housing area (R06) would experience an approximate 7 dB DNL increase. The base chapel and dormitories (W06) would experience a DNL of 71 dB, reflecting an increase of 6 dB DNL.

Table ES-6. Proposed Action Alternative DNL for Representative Points of Interest

Description				***DNL (dB)***	
Type	*ID*	*Points of Interest*	*On Base?*	*Proposed*	*Increase from No Action*
Park (includes recreation and wildlife)	P01	Salcha River State Recreation	No	<45	N/A
	P02	Harding Lake		<45	N/A
	P04	Tanana Valley State Forest		<45	N/A
	P05	Chena Lakes		47	1
Residential	R01	Tare Nike Missile Site		49	2
	R02	6615-6647 Richardson Highway		52	7
	R03	Old Valdez Trail		53	5
	R06	Eielson AFB Housing	Yes	68	6
School/ Day Care	S01	North Pole Elementary School/ Eagle Wings Assisted Living	No	<45	N/A
	S02	North Pole Middle School		<45	N/A
	S03	Association of Village Council Presidents Head Start		<45	N/A
	S04	Loving Learning Day Care		48	2
	S05	Salcha Elementary School		<45	N/A
	S06	Anderson Elementary School/ Child Development Center	Yes	64	5
	S07	Ben Eielson Junior/Senior High School		66	5
	S08	Crawford Elementary School		66	5
Place of Worship/ Residential	W01	Moose Creek Baptist Church	No	66	5
	W02	Pioneer Baptist Church		60	5
	W03	Church of Christ		64	6
	W04	Lord of Life Lutheran Church		<45	N/A
	W05	North Pole Missionary Chapel		<45	N/A
	W06	Base Chapel/Base Dorms	Yes	71	6

Legend: N/A = Not Applicable.

Speech Interference. In terms of indoor speech interference, off-base locations would experience a range of one to three more interference events per hour with windows closed and between one and three more events per hour with windows open when compared to the No-Action Alternative. The percent probability of indoor awakening events for representative residential locations, during environmental nighttime hours (10:00 p.m. to 7:00 a.m.), would be less than 5 percent with windows opened and no

more than 2 percent with windows closed. The percentage probability of awakening would increase by less than 2 percent under the Proposed Action Alternative relative to the No-Action Alternative.

Classroom Learning Interference. None of the off-base schools would experience increases in classroom learning interference events; however, the Loving Learning Day Care Center would experience a one-event per hour increase with windows open compared to zero under the No-Action Alternative. On base, the three schools and the child development center would experience increased numbers of hourly classroom learning interference events with windows closed or open. Relative to the No-Action Alternative, Anderson and Crawford Elementary Schools and Ben Eielson Junior/Senior High School would experience two more classroom disruptions per hour with windows closed and three more per hour with windows open. These interruptions could disturb the teaching continuity within the classroom.

Sleep Disturbance. Under the Proposed Action Alternative, there would be approximately 1,800 nighttime disturbance events at residential areas. This represents a 23-percent increase relative to the No-Action Alternative. The percentage probability of awakening would be less than 6 percent with windows opened and no more than 3 percent with windows closed. When compared to the No-Action Alternative, the percent probability of awakening with windows open or closed would increase by about 2.4 percent.

Potential for Hearing Loss. Under the Proposed Action Alternative, no residential areas on or off base would be exposed to DNL greater than or equal to 80 dB. Therefore, a potential for hearing loss is not anticipated.

Workplace Noise. Air Force occupational noise exposure, prevention procedures such as hearing protection and monitoring would continue to be applied under the Proposed Action Alternative. These procedures would assure compliance with all applicable Occupational Safety and Health Administration and Air Force occupational noise exposure regulations.

Construction Noise. Noise is an unavoidable, short-term by-product of construction activities. The major noise events for this construction would take place on the base with only a negligible increase in traffic noise caused by vehicles entering and exiting the base for construction deliveries and work force arrivals and departures. On base, steps would be taken to minimize the impacts. These include having construction equipment enter at the South Gate and making sure all equipment is in good operating condition with an emphasis on maintenance of mufflers, bearings, and moving machinery parts. Stationary equipment with a potential to emit noise would be placed away from sensitive noise receivers. Stockpiles and haul roads would be planned so that the vehicle paths are away from sensitive noise receivers. Whenever possible, noise events would be scheduled to avoid noise sensitive times (e.g., weekends and holidays).

Non-Auditory Effects. The current state of scientific knowledge cannot yet support inference of a causal or consistent relationship between aircraft noise exposure and non-auditory health consequences for exposed residents. Although some recent studies offer indications, it is not yet possible to establish a quantitative cause and effect based on the currently available scientific evidence.

Land Use Compatibility

Off base, 73 more households would experience DNL between 65 and 70 dB. All the households exposed to DNL between 65 and 70 dB are in Moose Creek, to the north. To the west, areas would be exposed to DNL between 65 and 75 dB; however, no households or people were identified that reside

there. The Fairbanks North Star Borough (FNSB) identifies these lands to the north and west as general use. The majority of the area impacted by DNL greater than 65 dB is on base; the largest increase is in areas that would experience DNL between 65 and 70 dB.

Domesticated Animals and Wildlife

Construction: Noise generated during construction would be confined to the base. Domesticated animals and wildlife inhabiting areas surrounding new building construction and existing structure alteration projects could be subject to short-term increases in noise levels and human activity. Any increases would be temporary and therefore, no adverse impacts to on-base domesticated animals or wildlife.

Aircraft Operations: Wildlife could be startled and temporarily displaced in the presence of increased noise and activity around the flight line, as aircraft operations would more than double once the F-35s arrive. However, these responses are expected to be temporary and wildlife would be expected to move and use adjacent habitat in such instances. Aircraft have been flying at this installation for many decades and wildlife species would likely adapt to the increased noise levels generated by F-35A operations. No adverse impacts are anticipated for domesticated animals or wildlife under the Proposed Action Alternative.

Airspace

Population

Subsonic Flight. Subsonic noise levels under the northern JPARC airspace are represented by the Onset-Rate Adjusted Monthly Day-Night Average Sound Level metric, or L_{dnmr}. This metric accounts for the specific effects of low-altitude and high-speed operations that can occur in airspace such as MOAs or Restricted Areas. The busiest month was used for modeling purposes, or the conditions that would occur during the 6 weeks of major flying exercises. The results include both the F-35As and aircraft operating under the No-Action Alternative (reflective of current conditions). Please note that the modeling assumed that the Paxon Low and expanded Fox 3 MOAs would be charted by the time F-35As operate in northern JPARC airspace. However, if these two MOA changes are not charted, F-35As would operate at higher altitudes within the existing airspace structure and noise levels would be negligibly lower than presented here under the Proposed Action Alternative (Figure ES-7).

All MOAs within northern JPARC airspace were estimated to have L_{dnmr} values less than 65 dB, except R-2205 and R-2211. These two restricted areas would have L_{dnmr} of 71 and 68 dB, respectively, increasing by 5 to 7 dB relative to the No-Action Alternative. Subsonic noise conditions under the Proposed Action Alternative would not differ substantially from those found under the No-Action Alternative.

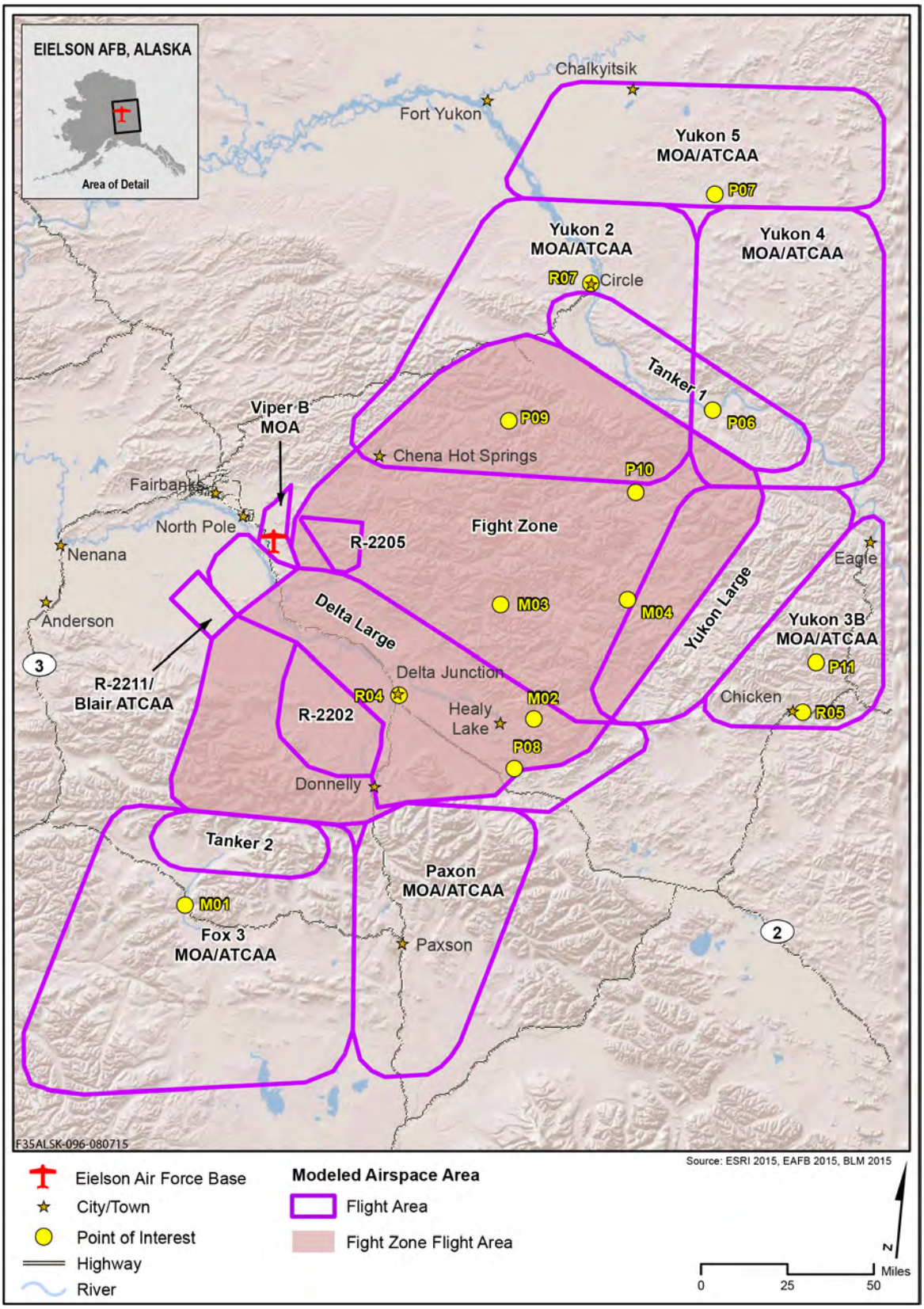


Figure ES-7. Modeled Northern JPARC Airspace and Representative POIs

Supersonic Flight. Under the Proposed Action Alternative, maximum C-weighted Day-Night Average Sound Levels (CDNL) of 56 dB would occur in the center of the Fight Zone area that comprises the Delta ATCAA and Yukon 1 MOA (Figure ES-8 and Table ES-7). Because air combat training would be concentrated near the center of the modeled flight area, the number and intensity of sonic booms would be less in areas that are not directly beneath the center of the modeled flight area. However, sonic booms may propagate horizontally, affecting ground areas beyond the military training airspace boundaries. Compared to the No-Action Alternative, the Proposed Action Alternative would increase the CDNL by no more than 1 dB across the flight areas. The towns of Delta Junction and Circle would be exposed to similar CDNL as found under the No-Action Alternative; Chicken would experience an increase of 1 dBC.

Table ES-7. Proposed Action Alternative Supersonic Noise Exposure and Sonic Booms per Busiest Month in Northern JPARC Airspace

Description		***Point of Interest***	***Location***	***Proposed Action***		***Increase from No Action***	
Type	*ID*			*CDNL (dBC)*	*Booms/ Busiest Month*	*CDNL (dBC)*	*Booms/ Busiest Month*
Multi-Use	M01	Denali Highway where it crosses Susitna River	Fox 3	49	12	0	1
	M02	Healy Lake Airport	Delta 4	50	15	0	1
	M03	Pogo Mine Airstrip	Yukon 1	55	36	0	2
	M04	Joseph Creek	Yukon 1	51	19	0	1
Park (includes recreation and wildlife)	P06	Yukon-Charley Rivers National Preserve	Yukon 4	51	18	0	1
	P07	Yukon Flats National Wildlife Refuge	Yukon 5	49	11	0	1
	P08	Lake George (southeast of Delta Junction)	Delta 4	48	11	0	1
	P09	Steese National Conservation Area/ Birch Creek WSR	Yukon 2	53	28	1	2
	P10	Charley WSR	Yukon 1	53	28	1	2
	P11	Fortymile WSR	Yukon 3B	<42	1	1	0
Residential	R04	Delta Junction	Delta 3	53	27	0	2
	R05	Chicken	Yukon 3B	<42	1	1	0
	R07	Town of Circle	Yukon 2	49	13	0	1

For the number of sonic booms generated during the busiest month, there would be an increase of two per busiest month in the vicinity of Pogo Mine Airstrip (M03), Steese National Conservation Area/Birch Creek Wild and Scenic River (WSR) (P09), Charley WSR (P10), and Delta Junction (R04). With the exception of Chicken (R05) and the Fortymile WSR (P11), where there would be no changes in the number of booms, all other POIs would experience a one boom per busiest month increase under the Proposed Action Alternative (Figure ES-9). Supersonic noise conditions under the Proposed Action Alternative would not differ substantially from those found under the No-Action Alternative. Therefore, the additional sonic booms generated by the F-35s would not produce significant adverse impacts.

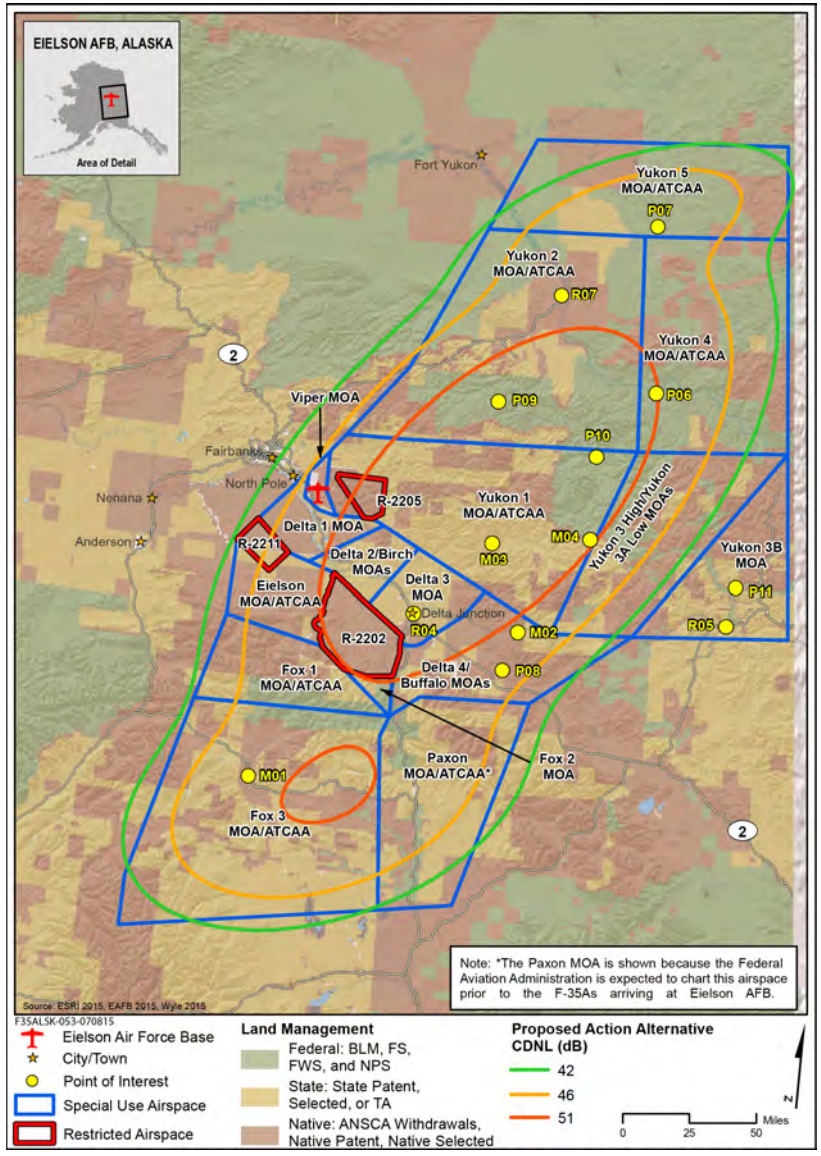


Figure ES-8. Proposed Action Alternative CDNL Contours for Supersonic Operations during the Busiest Month

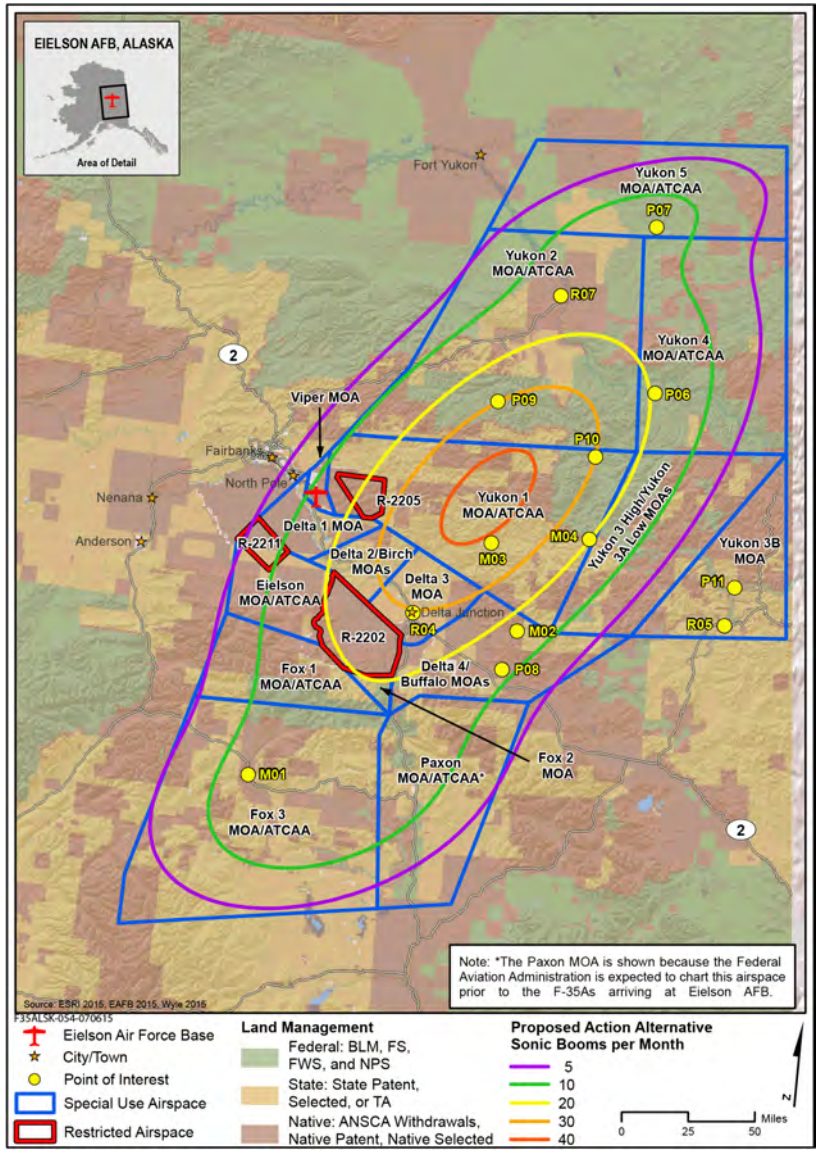


Figure ES-9. Proposed Action Alternative Estimated Number of Sonic Booms during the Busiest Month

Land Use Compatibility

In terms of outdoor speech interference, when compared to the No-Action Alternative, Viper MOA and R-2205 would experience increases in NA65 L_{max} of up to six events during the busiest month of the major flying exercises. For potentially audible outdoor events, all modeled flight areas, except the Yukon MOAs and the Paxon MOA, would have an NA35 L_{max} of at least one event during the busiest month of a major flying exercise. At 122 events during the busiest month, the Viper B MOA would have the greatest NA35 L_{max} of the modeled flight areas. The area under the Blair ATCAA would also have the greatest increase in NA35 L_{max}, at 56 events during the busiest month, relative to the No-Action Alternative. The L_{dnmr} values are shown for the representative POIs in Table ES-8 for the Proposed Action Alternative, compared to the No-Action Alternative. All POIs would have L_{dnmr} less than 65 dB; with the Healy Lake Airport environs (M02) experiencing an L_{dnmr} of 62 dB. Increases in L_{dnmr} would range between 4 and 5 dB when compared to the No-Action Alternative. However, all POIs would experience L_{dnmr} of less than 65 dB under the Proposed Action Alternative.

Table ES-8. Proposed Action Alternative L_{dnmr} for Representative POIs under Northern JPARC Airspace

POI			***No Action*** L_{dnmr} ***(dB)***	***Proposed***	
Type	*ID*	*Description*		L_{dnmr} *(dB)*	*Increase from No Action (dB)*
Multi-Use	M01	Denali Highway where it crosses Susitna River	<45	<45	5
	M02	Healy Lake Airport	58	62	4
	M03	Pogo Mine Airstrip	<45	<45	N/A
	M04	Joseph Creek	<45	<45	N/A
Park (includes recreation and wildlife)	P06	Yukon-Charley Rivers National Preserve	<45	<45	>= 3
	P07	Yukon Flats National Wildlife Refuge	<45	<45	>= 2
	P08	Lake George (southeast of Delta Junction)	53	57	4
	P09	Steese National Conservation Area/Birch Creek WSR	49	54	5
	P10	Charley WSR	<45	<45	N/A
	P11	Fortymile WSR	<45	45	4
Residential	R04	Delta Junction	53	57	4
	R05	Chicken	<45	<45	4
	R07	Town of Circle	49	54	5

Domesticated Animals and Wildlife

As detailed in Appendix E, Section E.2.14, animals exhibit a wide variety of responses to noise, ranging from startle to panicked flight. Consequently, some animal species may be more sensitive than other species and/or may exhibit different forms or intensities of behavioral responses. The majority of the literature suggests that domesticated animals (e.g., cows, horses, and chickens), as well as most wildlife exhibit adaptation, acclimation, and habituation after repeated exposure to jet aircraft noise and sonic booms. Noise is expected to increase in northern JPARC airspace; however, extensive avoidance measures are currently in place for areas within the JPARC that overlie critical habitat for nesting and calving, subsistence areas, hatcheries, and other areas supporting wildlife populations such as the Dall sheep, the Delta caribou herd, peregrine falcons, and salmon. These measures, which include seasonal and/or altitude restrictions, are identified in the 11th Air Force Alaska Airspace Handbook and must be followed by all Air Force and Air Force-sponsored military pilots operating in JPARC airspace. Therefore, all F-35A pilots would be required to adhere to these measures when operating in JPARC

airspace. No federally listed species would be affected, and it is anticipated that only minor and short-term responses would be experienced by eagles and migratory birds underlying northern JPARC airspace.

ES.7.3 Air Quality

***Base*:** The total incremental emissions from the Proposed Action Alternative construction, operations, personnel commuting, and heating are shown in Table ES-9. In addition to the criteria pollutants, volatile organic compounds (VOCs) and ammonia (NH_3) are included because VOCs are an important ozone precursor gas and ammonia can cause secondary particulate matter and interfere with visibility. The table shows the expected emissions during each year up to the steady state of 2021.

Table ES-9. Proposed Action Alternative Total Emissions by Year

Pollutant	*Emissions 2016 (ton/year)*	*Emissions 2017 (ton/year)*	*Emissions 2018 (ton/year)*	*Emissions 2019 (ton/year)*	*Emissions 2020 (ton/year)*	*Emissions 2021 (ton/year)**
VOC	0.926	5.423	0.677	11.698	23.398	23.398
NO_x	3.411	14.171	1.539	61.649	123.304	123.304
CO	2.979	13.863	8.871	164.636	329.299	329.299
SO_x	0.006	0.027	0.009	6.202	12.404	12.404
PM_{10}	2.299	4.061	0.085	10.496	20.992	20.992
$PM_{2.5}$	0.185	0.000	0.073	8.829	17.659	17.659
Pb	0	0	0	0	0	0
NH_3	0.006	0.034	0.080	0.465	0.930	0.930

Legend:
VOC = volatile organic compounds; NO_x = nitrogen oxides; CO = carbon monoxide; SO_x = sulfur oxides; $PM_{10/2.5}$= particulate matter 10 and 2.5 micrometers in size; and Pb = lead.

Additionally, because the emissions from aircraft operations are a continuing activity, the mobile source emissions of criteria pollutants predicted for each squadron of the 24 aircraft are shown separately in Table ES-10.

Table ES-10. Proposed Action Alternative F-35A Emissions per Squadron (24 aircraft per squadron)

Calendar Year	*Scenario*	*Emissions (tons/year)*					
		VOC	*SO_x*	*NO_x*	*CO*	*PM_{10}*	*$PM_{2.5}$*
2019	1st Squadron	8.8	6.2	59.1	118.1	10.4	8.8
2020	2nd Squadron	8.8	6.2	59.1	118.1	10.4	8.8
Total Emissions	**Both Combined**	**17.6**	**12.3**	**118.1**	**236.1**	**20.7**	**17.5**

Total emissions, after steady state operations would occur in 2021, were compared to the total emissions of the FNSB. The comparison showed the incremental increase to be 0.096 percent for CO, 1.26 percent for NO_x, 0.030 percent for VOCs, 0.246 percent for SO_x, 0.050 percent for PM_{10}, and 0.064 percent for $PM_{2.5}$. Due to the small incremental increases, the impact to regional air quality is not considered adverse.

A second quantitative analysis was conducted by comparing mobile source emissions of the A-10 and F-16 squadrons stationed at Eielson AFB in calendar year 2004, to the proposed F-35A emissions expected in 2021. The year 2004 represents a conservative estimate when the number of based aircraft was greater than what exists now. Comparing the 2004 emissions with the F-35A, 0.4 more tons per year of VOCs would be generated, 4.3 more tons per year of SO_x, 53.8 more tons per year of NO_x, 32.2 more tons per year of CO, and 12.8 less tons per year of PM_{10}. In 2004, $PM_{2.5}$, a subset of PM_{10}, reporting was not required by the U.S. Environmental Protection Agency (USEPA). When compared to historical emissions, the F-35A beddown would increase criteria emissions with the exception of PM_{10}. The two

most important pollutants to the regional air quality are CO and PM_{10} due to the nearby CO maintenance and the $PM_{2.5}$ nonattainment areas. While CO would increase above the historic levels, the expected emissions are still a small fraction of the FNSB emissions (0.096 per cent). PM_{10} emissions are expected to be less than historic emissions and are estimated to represent 0.050 percent of the FNSB emissions. There are no adverse impacts to regional air quality.

It was also identified that F-35A aircraft would traverse small portions of the $PM_{2.5}$ nonattainment and CO maintenance areas while arriving and departing on particular flight tracks below 3,000 feet above ground level (AGL). It was determined annual emissions would equate to less than 1 ton of $PM_{2.5}$ and about 1.1 tons of CO. The threshold, or *de minimis*, for $PM_{2.5}$ is 100 tons in nonattainment areas and for CO it is 100 tons for areas in maintenance. These emissions would not exceed *de minimis* thresholds for either criteria pollutant. Therefore, no conformity analysis is required and no adverse impacts to these maintenance and nonattainment areas.

***Airspace*:** The F-35A operations would only represent a small portion of the activity currently underway in northern JPARC airspace, an area in attainment for all criteria pollutants. The VOCs and NO_x projected annual emissions would be substantially smaller than those generated by F-35As at the base. This is because F-35As primarily would fly the majority of the time above the 3,000-foot AGL mixing height. Therefore, no adverse effects to regional air quality would be imposed. Additionally, visibility impairment to the only Class I area for Prevention of Significant Deterioration (PSD), Denali National Park, would not be affected. The Park is about 15 miles from the northern JPARC airspace and with the transport distance (i.e., 15 miles) emissions would be dispersed by the time they reach the Park. Other special use areas (e.g., conservation areas and WSRs) would not be exposed to visibility impairment, as the F-35A would spend a predominant amount of its flight time above the 3,000-foot AGL mixing height.

Greenhouse Gases. The computed carbon dioxide equivalent, or $CO_2(e)$, emissions after beddown of both F-35A squadrons is 31,704 metric tons, or 0.937 percent of the existing $CO_2(e)$ emissions for the FNSB region. Accordingly, no adverse impacts from GHG emissions due to the Proposed Action Alternative are anticipated.

ES.7.4 Safety

***Base*:** Operations and maintenance activities conducted on Eielson AFB would continue to be performed in accordance with all applicable safety directives.

Fire Risk and Management. Fire and crash response would continue to be provided by the Eielson AFB fire department. In response to the increased use of advanced composite materials in aircraft, a Hazardous Aerospace Material Mishap Emergency Response (HAMMER) Integrated Process Team was chartered. The HAMMER project identifies and inventories all hazardous aerospace materials on Air Force weapon systems and ensures procedures are in place to protect personnel from safety/health hazards associated with aerospace vehicle mishaps. Although not anticipated, if new response procedures are required for unique materials used in the F-35A, the Air Force will develop them after the F-35A model is finalized and prior to being based at Eielson AFB. Under the Proposed Action Alternative, fire fighters would continue to be fully trained and appropriately equipped for crash and rescue response; the F-35A beddown would not change these abilities. If new information and/or fire-fighting techniques associated with composite materials burned during an accident are identified, then local fire-fighting departments will be informed. No adverse impacts to fire risk and management are anticipated.

Accident Potential Zones. No changes to existing Accident Potential Zones (APZs) or Clear Zones would be required to accommodate F-35A operations. The approximate 72 residences would continue to be located within APZ II in Moose Creek; however, the F-35A would follow all established airfield course rules and flight procedures to ensure that no new or increased safety risks would be introduced to the installation population or adjacent communities. No adverse impacts associated with APZs are anticipated.

Aircraft Mishaps. Because of the emphasis on safety and design of its more powerful engine, the F-35A should have an operational mishap rate similar to other tactical fighter jet aircraft like the F-16 and F-15. Additionally, F-35A pilots would use simulators extensively. Simulator training would include all facets of flight operations and comprehensive emergency procedures. This minimizes risk associated with mishaps due to pilot error. The sophistication and fidelity of current simulators and related computer programs match the advancements made in aircraft technology. Since they were operational to January 2015, F-16s had a Class A mishap rate of 3.49 and F-15s a rate of 2.36 for every 100,000 hours flown. As of January 2016, all three F-35 variants have flown a combined 23,000 hours; the F-35A has flown over 9,000 hours with one Class A mishap (an engine fire).

Bird/Wildlife Strike Hazards (BASH). Over the past 5 years, there has been an annual average of 9.8 bird-aircraft strikes at Eielson AFB. Implementing the Proposed Action Alternative is expected to increase airfield operations by 138 percent, which would increase the number of bird strikes by aircraft to a possible average of 24. Although this is a substantial increase in strikes, the Air Force considers this a minor impact that would have only negligible effects on bird populations on the base. Three factors support this conclusion: 1) the F-35A would operate like all other fighter aircraft that have used Eielson AFB; 2) no aspect of the Proposed Action Alternative would increase concentrations of birds on or near the base; and 3) the base would continue use of the 354 FW BASH Plan and Air Force tools (bird avoidance model and Avian Hazard Advisory System) and cooperation with local U.S. Department of Agriculture Wildlife Services to minimize the BASH potential. Furthermore, when BASH risk increases, limits are placed on low-altitude flights and certain types of training (e.g., multiple approaches). Minor adverse impacts associated with BASH are anticipated.

Airspace: Under the Proposed Action Alternative, operations in northern JPARC airspace would increase when compared to the No-Action Alternative. Such an increase would not affect the abilities of this airspace to accommodate the proposed training activities by the F-35As and would not result in structural changes to JPARC airspace. Total operations within northern JPARC airspace and ranges would remain within the capability and capacity of the airspace and managing entities. If new information and/or fire-fighting techniques associated with composite materials burned during an accident are identified, then local fire-fighting departments will be informed.

Fire Risk and Management. The potential for wildfire ignition by flare use was identified as a public concern with F-35A operations; however, based on the emphasis of flight at higher altitudes, roughly 90 percent of F-35A flares released throughout authorized JPARC airspace would occur above 15,000 feet MSL, further reducing the potential risk for accidental fires. To mitigate the potential for wildland fires in the Delta Junction area, all fire management and response practices currently employed would continue. These include monitoring the fire weather index and modifying planned training activities accordingly, establishing non-training buffers within 0.5 miles of training areas to protect the surrounding areas, and conducting prescribed burns and mechanical thinning in training areas. The following standard measures would continue to be implemented:

- Maintain firefighting materials and equipment by all units on ranges or training areas during high and extreme fire risk index rating periods. These firefighting tools would include but are not limited to Pulaskis, beaters, and portable water extinguishers.
- Limit the use of certain ammunition and pyrotechnics during periods of elevated fire risk indices.

Implementation of the above listed measures would minimize the potential for adverse impacts to lands and the public.

Aircraft Mishaps. No military to civilian midair collisions and few reported near misses have occurred within the northern JPARC airspace. Pilot attentiveness to safe flight practices would continue to avoid impacts to civil and commercial flights in the airspace. Additionally, maintenance of situational awareness, and use of available communications for tracking the scheduled and near real-time status of the JPARC airspace helps maintain a safe flying environment for all concerned. Any changes to those capabilities and the current or future areas in which this service is provided would be appropriately addressed and communicated through the same venues. The majority of flight operations would be conducted over remote areas; however, in the unlikely event that an aircraft accident occurs, existing response, investigation, and follow-on procedures would be enforced to ensure the health and safety of underlying populations and lands. No adverse aircraft mishap impacts are anticipated under the Proposed Action Alternative.

Bird/Wildlife Strike Hazards. Under the Proposed Action Alternative, the F-35A would operate in the same airspace environment as the current aircraft. As such, the overall potential for bird-aircraft strikes is not anticipated to be statistically different following the beddown of the F-35A. It is anticipated that BASH potential would be mitigated by the fact that F-35A aircrews operating in the JPARC would be required to follow applicable procedures outlined in the 354 FW BASH Plan and the fact that the majority of its flight time is spent at higher altitudes. When BASH risk increases, limits are and would continue to be placed on low-altitude flights. Special briefings are provided to military pilots whenever the potential exists for greater bird-strike risks within the airspace; F-35A pilots would also be subject to these procedures. Under the Proposed Action Alternative, BASH risk would not impose adverse impacts when compared to the No-Action Alternative.

ES.7.5 Socioeconomics

Base:

Population, Demographics, and Economics. The FNSB population is projected to be 106,822 by calendar year 2020; the addition of 2,765 would represent an increase of 2.6 percent over this level. A change in population is not considered an impact itself; however, population change has the potential to drive positive or negative impacts to other socioeconomic factors. Under the Proposed Action Alternative, FNSB demographic characteristics would not change in any material way. Some slight variation from the No-Action Alternative conditions may occur, but any changes would not be adverse. Construction activities are anticipated to occur from 2016 to 2019 and would inject an estimated $453 million (direct, indirect, and induced) into the economy. Once the two squadrons become operational in 2020, there would be an estimated direct, indirect, and induced annual economic benefit of approximately $250 million. No adverse impacts to population and demographics, and a beneficial economic impact would be anticipated under the Proposed Action Alternative.

Schools, Housing, Transportation, and Utilities. The Proposed Action Alternative would add about 385 students to the Fairbanks North Star School District enrollment, representing an increase of 2.8 percent

over current enrollment. The school district identified excess capacity at schools that would be used by these additional students. The Proposed Action Alternative, therefore, would not push the Fairbanks North Star School District beyond its current capacity, and because it is anticipated that federal education impact aid payments would increase, in proportion to the additional student population, affects to schools would not be adverse.

Housing during Construction. The short-term housing requirement for workers hired during the construction phase of the Proposed Action Alternative is expected to last several construction seasons, between 2016 and 2019. The EIS estimates that 1,387 jobs would be directly created to support construction efforts over this period, with another 952 indirect and induced jobs being required. For this analysis, it was assumed that 1,387 direct construction jobs would potentially require local housing, as the indirect and induced jobs tend to be service positions, typically coming from the local labor supply. With local hire advocated by local governments, it is assumed that half of the direct jobs would be drawn from the FNSB labor force, leaving 693 jobs to be filled by non-local labor. These individuals would need housing for varying lengths of time, depending on the seasonality of their work. Based on the analysis contained in the FNSB *Housing Needs Assessment*, there are currently an estimated 1,068 vacant housing units within a 30-minute commute of Eielson AFB, which is sufficient to absorb the anticipated non-resident workers. Because all construction needs to be completed prior to the arrival of the first aircraft in August 2019, construction activities would be declining by the time the first influx of military personnel start arriving. Based on this analysis, there would be no adverse impacts to the local housing market caused by F-35A construction requirements.

Housing once Operational. The recently completed *Air Force Housing Requirements and Market Analysis* (HRMA) identified that no new Privatized Housing would be needed on Eielson AFB to support the additional military and civilian personnel and their dependents associated with the F-35A beddown proposal. The HRMA assumed that personnel (military, civilian, and contractor) would either rent or purchase off-base housing during their tour at Eielson AFB. According to the HRMA there would be a rental housing unit shortfall of 1,064 for military families and 579 unaccompanied personnel by 2020. However, the HRMA assumed a commute distance of 20 minutes, which did not include units available throughout North Pole and Salcha. The HRMA also assumed that there would be no growth in the number of available rental units from 2015 to 2020. According to the Fairbanks Economic Development Corporation's *Housing Needs Assessment*, however, there were 3,495 available vacant rental units in 2013. Based on these 2013 figures, this assessment indicated there would be adequate supply in 2020 for the increases in personnel and dependents seeking off-base housing.

Based on 2000 and 2010 Census data for population and housing growth in FNSB, Table ES-11 shows the estimated population and housing-unit availability in 2020. As depicted, the FNSB population would increase by 1.1 percent per year over 10 years, totaling 110,555 (this includes the additional population associated with the Proposed Action Alternative). This results in an increase of 12,974 by 2020 (or 13.3 percent increase from 2010). By averaging the per capita rates from the 2000 and 2010 census data, total housing units projected for 2020 would be 47,182, or an increase of 5,399 units (or 12.92 percent increase) (U.S. Census 2010, 2015). For occupied, owner occupied, and renter occupied housing units census data indicate that there would be an increase of 5,175, 2,149, and 3,025 units, respectively. Based on an average vacancy rate of 11.8 percent, there would be an estimated 2,130 vacant rental units available in 2020. While these numbers are estimates, they provide a reasonable basis for determining

future housing-unit availability. Based on both the census data and the *Housing Needs Assessment*, there would not be a shortfall in available housing units and no adverse impacts are anticipated.

Table ES-11. Population and Housing Growth Projections to 2020

Category	*2000 Census*	*2010 Census*	*2020 Projected*
Population	82,840	97,581	110,555
Total Housing Units	33,291	41,783	47,182
Occupied Housing Units	*29,777*	*36,441*	*41,616*
Owner Occupied Units	16,077	21,410	23,559
Renter Occupied Units	13,711	15,031	18,056
Renter Vacant Units	*1,448*	*1,922*	*2,130*
Rental Vacancy Rate	10.56%	12.79%	11.80%

Source: U.S. Census 2010, 2015.

Transportation and Utilities. Existing transportation and utilities infrastructure on Eielson AFB (e.g., road network, power, potable water, wastewater, and solid waste), along with planned upgrades, would support additional on-base requirements associated with the Proposed Action Alternative. Addition of entry and merge lanes at the South Gate for construction traffic would lessen congestion at the main North Gate, and accommodate entering and exiting vehicles onto Richardson Highway. The Proposed Action Alternative would neither restrict nor close the Richardson Highway. The increase of off-base residential population is not anticipated to strain regional transportation and utilities infrastructure. Therefore, no adverse impacts to transportation and utilities are anticipated.

Airspace: There would be no changes to socioeconomic conditions underlying northern JPARC airspace resulting from the Proposed Action Alternative. Continued compliance with flight avoidance areas and seasonal flight restrictions in identified subsistence areas underlying JPARC airspace would continue. Therefore, no adverse impacts to socioeconomic sectors or to subsistence pursuits are anticipated.

ES.7.6 Land Management

***Base*:** Under the Proposed Action Alternative, there would be no changes to land management when compared to the No-Action Alternative. No installation plans would need to be changed and FNSB land management plans are consistent with the anticipated population growth associated with bringing two F-35A squadrons to Eielson AFB. Implementing the Proposed Action Alternative would not result in adverse impacts to land management.

***Airspace*:** The Proposed Action Alternative would not require acquisition of any lands underlying northern JPARC airspace. The F-35As would operate in existing airspace and in a similar manner to current use, but with an increase in operations. The F-35As, however, would generally fly 90 percent of the time at altitudes above 15,000 feet MSL. When compared to the No-Action Alternative, F-35A operations would not require any changes to land management plans or conflict with existing management objectives of federal, state, tribal, or local management agencies. This conclusion is justified because F-35A operations are a continuation of military aircraft training in the northern JPARC airspace, which have occurred for several decades. The introduction of a new aircraft, in an area already overflown by military aircraft, would not necessitate any changes to land management plans for special use areas underlying northern JPARC airspace.

ES.7.7 Cultural and Traditional Resources

***Base*:**

Traditional/Alaska Native. To date, Alaska Native villages and organizations have not identified any traditional cultural properties on Eielson AFB. Therefore, the Proposed Action Alternative would not introduce any direct or indirect adverse impacts to traditional cultural properties.

Archaeological. No known prehistoric sites have been recorded at Eielson AFB. Therefore, no direct or indirect adverse impacts to prehistoric sites from the Proposed Action Alternative are anticipated. However, if human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during land-disturbance activities, work will cease immediately in the vicinity of the artifact discovery and site personnel will notify the Eielson AFB Cultural Resources Manager immediately. In consultation with the Alaska State Historic Preservation Office, the Cultural Resources Manager will follow Section 106 processes to determine the site's National Register eligibility and if necessary, determine a course of action to avoid or mitigate the site. If an archaeological dig is deemed necessary, the person(s) conducting the dig will meet all the requirements specified in 32 CFR 229.8. The Tanana Chiefs Conference will be notified of the discovery in writing.

Architectural. Two buildings, 1306 and 1141, in the Flightline Historic District would undergo interior modifications. These modifications would not affect the exterior visual aspect of the Flightline Historic District. Several other facilities near, but outside the Flightline Historic District would also be modified but would not affect the historic attributes of the district. Six new munitions storage igloos are also scheduled for construction in the Quarry Hill Munitions Storage Historic District to support the increased munitions requirements of the F-35A aircraft. No demolition of existing munitions storage igloos would occur and all new igloos would be constructed in vacant areas. This munitions storage district falls under the Program Comment entitled *Program Comment for World War II and Cold War Era (1939 – 1974) Ammunition Storage Facilities*. As such, proposed construction of six more storage igloos would not alter the district's historic status. No direct or indirect impacts are anticipated within the Engineer Hill Munitions Historic District, as no facility or infrastructure construction, renovations, or modifications are proposed within or adjacent to this district. The Alaska State Historic Preservation Office concurred with the Air Force's finding of no effect to historic resources within the area of potential effect of the base.

***Airspace*:**

Traditional/Alaska Native. To date, no specific traditional cultural properties have been identified by Alaska Native villages and communities under the airspace in the area of potential effect. As discussed earlier, there would be little change in subsonic or supersonic noise levels in northern JPARC airspace under the Proposed Action Alternative. Therefore, no adverse impacts to traditional cultural properties are anticipated. Under the Proposed Action Alternative, subsistence hunting could potentially become more difficult due to the increase in aircraft noise. However, seasonal adjustments, restrictions, and limitations, as identified in the 11th Air Force Alaska Airspace Handbook, have been instituted to minimize impacts to subsistence hunting. Therefore, no adverse impacts to traditional subsistence opportunities would occur.

Archaeological and Architectural. Under the Proposed Action Alternative, the only source of potential impacts to archaeological or architectural resources beneath the northern JPARC airspace is through sound and vibration. There would be little change in subsonic or supersonic noise levels in northern

JPARC airspace. Noise levels in most areas would not exceed 45 dB L_{dnmr}, including at the Eagle Historic District National Historic Landmark. Compared to existing conditions, the Proposed Action Alternative would increase the supersonic noise levels by less than 1 dB. This would occur in areas already subjected to sonic booms and would not be at a level to produce an adverse effect to historic properties. Therefore, no direct or indirect adverse impacts to archaeological or architectural resources would occur under the Proposed Action Alternative. The Air Force identified a finding of no effect on historic properties in the airspace area of potential effect and received concurrence of this finding from the SHPO.

ES.7.8 Environmental Justice and Protection of Children

***Base*:** With the exception of noise, there would be no adverse disproportionate impacts to environmental justice populations, nor would there be adverse impacts to sensitive receptors such as children and the elderly. As presented in Sections 4.4 *Air Quality*, 4.5 *Safety*, 4.12 *Water Resources*, 4.13 *Hazardous Materials, Hazardous Wastes, Toxic Substances, and Contaminated Sites*, and 4.14 *Recreational and Visual Resources* there are no adverse impacts introduced to the general public from F-35A operations under the Proposed Action Alternative. Under the Proposed Action Alternative, aircraft-generated DNL equal to greater than 65 dB would increase for some areas outside of base boundaries; however, noise levels would not exceed 65 dB DNL for any concentrations of the elderly, or low-income and minority populations (Figure ES-10). Noise levels below 65 dB DNL are typically considered compatible with all land uses and sensitive receptors such as children and the elderly. Therefore, the Proposed Action Alternative would not introduce disproportionate adverse impacts generated by aircraft noise to off-base environmental justice communities nor to elderly populations.

Supplemental noise analysis, however, does indicate that classroom learning interference events would increase on base at Ben Eielson Junior/Senior High School, Crawford Elementary School, Anderson Elementary School, and the Child Development Center. At all four locations, classroom learning interference events would increase by three more events per hour with windows opened and two more events per hour with windows closed. Off base, the Loving Learning Day Care center would experience no change in the number of events with windows closed but a one-event per hour increase would occur with windows opened. This represents an increase of one compared to the No-Action and baseline conditions. These classroom learning interference event increases could introduce enough disruptions in teaching continuity that could affect the children's ability to learn when these disruptions occur. These interference events would be considered adverse.

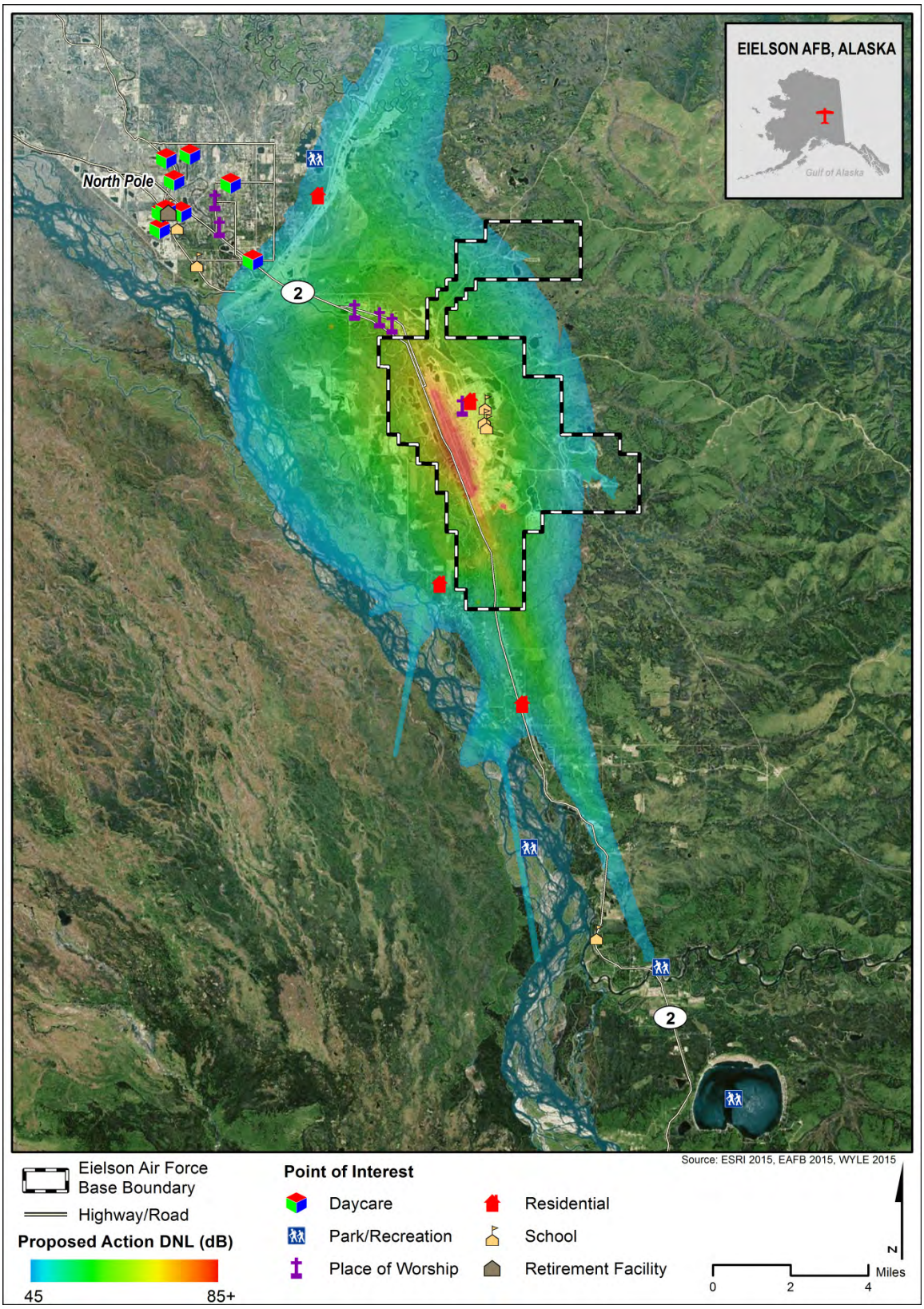


Figure ES-10. Proposed Action Alternative Concentrations of Children and the Elderly Experiencing Noise Levels 45 to 85 dB DNL

***Airspace*:** There would be no air quality, water quality, floodplains, or hazardous materials/toxic wastes impacts introduced that would disproportionately adversely affect the health and safety considerations of any environmental justice populations underlying northern JPARC airspace. The same conclusion applies to concentrations of children and elderly populations. In terms of the acoustic environment, under the Proposed Action Alternative, subsonic noise levels do not increase more than 5 dB DNL; supersonic noise levels increase no more than 1 dBC; and the number of sonic booms generated during the busiest month (i.e., during the major flying exercises) would increase no more than two booms per busiest month. In no instances, would there be adverse impacts to any sensitive populations underlying northern JPARC airspace. Therefore, no disproportionate health effects or environmental concerns would occur to environmental justice populations; nor would there be adverse impacts to children and the elderly.

ES.7.9 Natural Resources

***Base*:** There are no designated critical habitats or threatened and endangered species listed under the Endangered Species Act known to occur on Eielson AFB. About 17 acres of wetlands would be removed because of construction activities in the southern end of the runway (Figure ES-11). There are no practicable alternatives for these wetland impacts because of the need to accommodate the aircraft hangars and shelters adjacent to F-35A operations facilities along the flight line, locate the south heating plant next to existing utility corridors, and place the flight line kitchen near aircraft operations and logistics areas. The missile maintenance facility location was placed to allow for explosive safety distance requirements from other facilities. The South Gate would be reopened with an expanded inspection area and new entry and merge lanes constructed along Richardson Highway. Impacts associated with re-opening the South Gate are unavoidable. Expansion of the gate is needed because of increased Anti-Terrorism/Force Protection directives that require inspection of all commercial and construction vehicles entering the base. There is no practicable alternative to expanding the existing inspection area at the South Gate, it has to be large enough to accommodate the larger construction equipment and commercial trucks and the higher volume of vehicles anticipated during construction. The new entry and merge lanes are needed so that construction vehicle and commercial traffic entering and exiting the base do not impede traffic at the North Gate or along the Richardson Highway. Through the section 404 permitting process, these significant adverse wetland impacts would be mitigated by either purchasing wetland credits from locally available mitigation banks or paying in *lieu* of fees.

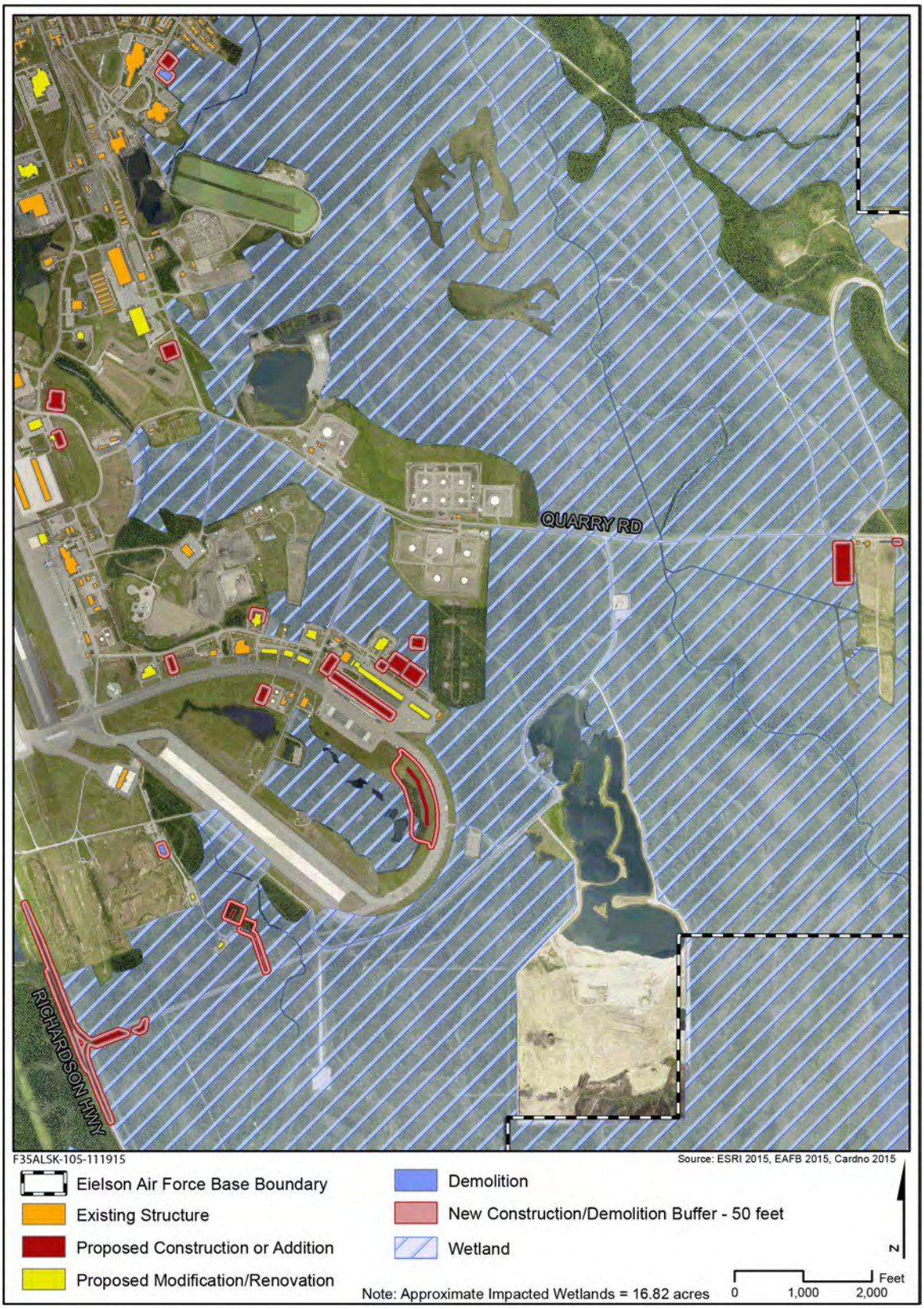


Figure ES-11. Proposed Action Alternative Facility and Infrastructure Construction and Modification in Wetland Areas

***Airspace*:** No adverse impacts would occur to vegetation, wildlife, or wetlands underlying northern JPARC airspace because there would be no construction associated with this proposal. Ordnance and munitions use would occur at military ranges authorized for such use under northern JPARC airspace (i.e., Oklahoma, Stuart Creek, and Blair Lakes Impact Areas) and would continue to be managed and protected by the Air Force and Army under existing Integrated Natural Resource Management Plans. Sources of potential impacts to natural resources under the Proposed Action Alternative include increases in aircraft activity, which changes the acoustic environment and the potential for BASH within the northern JPARC airspace. To minimize effects of aircraft flight operations to special use areas underlying JPARC airspace, the 11th Air Force institutes extensive avoidance measures as part of their standard operating procedures, as codified in the 11th Air Force Alaska Airspace Handbook. These include, but are not limited to, seasonal avoidance areas and altitude restrictions over critical habitat for wildlife such as Dall sheep, the Delta caribou herd, peregrine falcons, and areas used for subsistence pursuits, as well as salmon hatcheries. F-35A flight operations would adhere to all published airspace avoidance areas and seasonal restrictions within JPARC. Therefore, no adverse impacts to wildlife populations are expected under the Proposed Action Alternative.

For special status species, only two federally listed threatened or endangered species have the potential to be found under northern JPARC airspace: the short-tailed albatross and Eskimo curlew. These are shore birds and the likelihood of their existence in northern JPARC airspace would be negligible. Additionally, no critical habitat lies underneath northern JPARC airspace. Therefore, no adverse impacts to threatened or endangered species would occur under the Proposed Action Alternative.

A wide variety of migratory bird species listed under the Migratory Bird Treaty Act (e.g., trumpeter swans and peregrine falcons) occur within the northern JPARC airspace, including bald and golden eagles, which are also protected under the Bald and Golden Eagle Protection Act. To minimize the risk of mid-air collisions and disturbance to migrating birds, visual observations of migrating birds are communicated between military pilots and range control personnel. Continued adherence to the BASH plan as well as to the limitations, restrictions, and avoidance measures prescribed in the 11th Air Force Alaska Airspace Handbook, would minimize adverse impacts to eagles and migrating birds.

ES.7.10 Earth Resources

Approximately 66 acres would be disturbed for proposed construction. The area proposed for new construction lies on a flat area of the base; therefore, excess runoff and erosion would not be generated. Most of the construction would occur on areas of the base that have been previously disturbed or are currently occupied by existing buildings or structures. Any needed fill would be taken from on-base resources. As such, no adverse impacts to geology, topography, and soils would occur.

Although Eielson AFB lies in a seismically active area, most earthquakes are low in magnitude with only a few reaching a magnitude of 5.0 on the Richter scale. Construction would not affect seismic activity nor would the proposed construction be exposed to unique seismic risks requiring additional design and construction criteria beyond what is normal for the Fairbanks area. Therefore, no adverse impacts would result from the seismic conditions at Eielson AFB.

ES.7.11 Water Resources

***Base*:**

Quantity. An estimated population increase would introduce additional demand on the water supply from the aquifer located both on and off base. The estimated population increase of 2,765 individuals (assuming 148 gallons/day/capita) would introduce additional demands on potable water supply. This is estimated to be 409,220 gallons per day (0.41 million gallons per day). As this aquifer is part of a vast system, receives constant recharge from the nearby Tanana and Chena Rivers, and has existing excess capacity, an increase in less than 6 percent of the total FNSB population would not adversely affect water quantity within the local aquifer system. Additionally, increases of wastewater due to the growth of on-base personnel and dependents would not exceed the Eielson AFB wastewater permitted level of 2 million gallons per day nor hamper the ability of the FNSB to provide such services to those living off base. In terms of wastewater, there is existing capacity to support this population increase through on- and off-base services and, therefore, no adverse impacts are anticipated to either potable or wastewater resources.

Quality. Impacts to water quality due to construction-related activities, would be minimized or eliminated by the incorporation of proper construction design, erosion control (e.g., silt fencing), and structural engineering techniques (e.g., paving to eliminate sedimentation) into the final project design and construction. Drinking water would continue to be monitored for contaminants. No adverse impacts to water quality are anticipated because of the Proposed Action Alternative.

Stormwater. Approximately 21 of the 66 acres would be converted to impervious surfaces. Localized increases in stormwater runoff could potentially occur in these areas; however, any possible increases would not exceed the current capacities of stormwater systems at Eielson AFB. Garrison Slough is primarily a stormwater drainage ditch and is the only designated impaired water body located on the installation (specifically with polychlorinated biphenyl or other potential contaminants). Garrison Slough is connected to groundwater that is impacted by perfluorinated compounds. It has tested above the USEPA's provisional health advisory level for perfluorooctane sulfonate. However, construction would not occur in areas likely to affect the slough nor would the Proposed Action Alternative introduce increased levels of polychlorinated biphenyl.

No adverse impacts to stormwater systems are anticipated under the Proposed Action Alternative. With adherence to federal regulation (Energy Independence and Security Act of 2007, Section 438), which requires that any construction project, with a footprint greater than 5,000 square feet (or 0.1 acre) or renovations that expand the footprint of existing facilities by 5,000 square feet, must maintain or restore to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of the flow.

Floodplains. For analysis purposes and in line with Executive Orders 11988 and 13690 covering floodplain management, the Air Force examined potential impacts of the Proposed Action Alternative by applying the FNSB-delineated map of the 100-year floodplains and then compared these results using the Federal Emergency Management Agency's (FEMA) 100-year floodplain map data. According to the FNSB map data, up to 5 acres would be developed within the 100-year floodplain (Figure ES-12); however, according to the FEMA mapping, up to 56 acres in the 100-year floodplain would be developed (Figure ES-13). No matter which floodplain map is used, there is no other practicable alternative for

Figure ES-12. Proposed Action Alternative Facility and Infrastructure Construction and Modifications within the FNSB 100-Year Floodplain

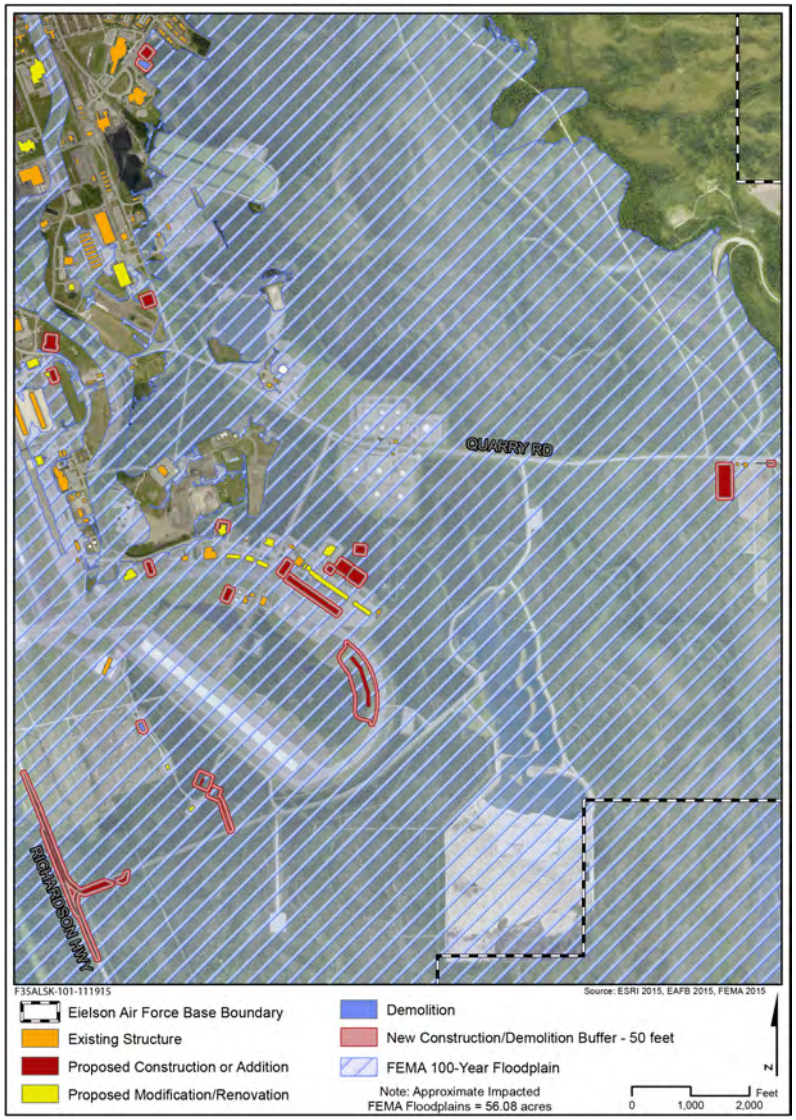


Figure ES-13. Proposed Action Alternative Facility and Infrastructure Construction and Modifications within the FEMA 100-Year Floodplain

locating these facilities along and adjacent to the flight line in the floodplain. To ensure adherence to the Executive Orders, the Air Force used the more conservative FEMA estimate to evaluate the extent of impacts.

In total, all of the facilities proposed in the South Loop (see Figure ES-3) lie within the FEMA 100-year floodplain, as well as the Field Detachment Unit, School Age Facility, Combat Arms and Maintenance Range, and the expansion of the Shooting Points (see Figure ES-2). Placement of proposed F-35A operational and maintenance facilities in the South Loop is restricted because they cannot be sited within explosive safety distance arcs and require being adjacent to the flight line. The South Gate, currently closed, would be reopened to divert construction traffic from and minimize congestion at the North Gate. At the South Gate, the vehicle inspection area would be expanded to support commercial and construction equipment, and entry and merge lanes would be established on both sides of the Richardson Highway to minimize congestion along the highway. The majority of construction would occur at the south end of the base and an entrance here would minimize on-base congestion and allow construction vehicles and equipment closer access to the construction sites. No alternative to alleviate traffic congestion at the North Gate and along Richardson Highway is practicable.

Please note that the Executive Orders do not prohibit development in the 100-year floodplain, nor do they require flood proofing, if there is no practicable alternative. As the proposed facilities need to be constructed at the same elevations as the existing facilities along the South Loop, all existing and new facilities will be 8 to 10 feet below the elevation of the 100-year flood event. Because raising floor elevations above this level is not practicable, and there is no other location on base for the F-35A facilities that meets operational and safety requirements, a Finding of No Practicable Alternative is incorporated into the Final EIS. If the Air Force chooses to implement the Proposed Action Alternative, it is accepting the flood risk for these facilities.

***Airspace*:** Under the Proposed Action Alternative, there would be no ground-disturbing activities or personnel changes associated with training and operations conducted within northern JPARC airspace. Therefore, no adverse impacts to water resources quality or quantity, stormwater systems, or floodplains would result from implementing the Proposed Action Alternative in northern JPARC airspace.

ES.7.12 Hazardous Materials, Hazardous Wastes, Toxic Substances, and Contaminated Sites

Base:

Hazardous Materials. With an increase in the number of aircraft based at Eielson AFB, there would be an overall increase in hazardous materials used. Procedures for hazardous material management established for Eielson AFB would continue during all construction and renovation activities as well as in future aircraft maintenance and operational activities. These existing practices and procedures can accommodate the increase of hazardous materials. The types of materials recycled from F-35A maintenance would be similar to aircraft currently operating at Eielson AFB and no changes to recycling procedures would be required. No adverse impacts would occur to hazardous materials if the Proposed Action Alternative were implemented.

Hazardous Waste. The types of hazardous waste streams generated by F-35A operations are expected to be fewer in comparison to those generated by F-16 aircraft because operations involving hydrazine, cadmium and hexavalent chromium primer, and various heavy metals have been eliminated or greatly reduced in the F-35A. Hazardous waste quantities would increase because there would be more aircraft

operating from what is found under the No-Action Alternative. Eielson AFB would continue to operate within its large quantity generator hazardous waste permit conditions. In addition, established hazardous waste procedures would continue to be followed during future squadron operations and for all construction and renovation that may occur in association with the Proposed Action Alternative. The disposal of low observable coatings and demilitarization activities would be contracted to a vendor permitted to dispose of such materials and not affect the waste streams at Eielson AFB. No adverse impacts would occur to hazardous wastes if the Proposed Action Alternative were implemented.

Toxic Substances. Any structures proposed for upgrade or retrofit would be inspected for asbestos containing material and lead-based paint according to established Eielson AFB procedures prior to any renovation activities. If any issues are discovered during renovation activities, all asbestos containing material would be properly removed and disposed of prior to or during demolition in accordance with 40 CFR 61.40 through 157 and established Eielson AFB procedures. Any lead-based paint would also be managed and disposed of in accordance with Toxic Substance Control Act, Occupational Safety and Health Administration regulations, Alaska requirements (regarding work-site practices for buildings with lead-based paint), and established Eielson AFB procedures. No adverse impacts associated with toxic substances are anticipated under the Proposed Action Alternative.

Installation/Environmental and Compliance Restoration Programs. Proposed construction activities overlap or lie adjacent to Installation Restoration Program sites and several Compliance Restoration Program sites. Although these restoration program sites coincide with proposed renovation and/or construction, close coordination with the Environmental Restoration Program staff would occur to avoid significant adverse impacts. Military Response Area sites also occur near proposed construction areas but none coincides with the areas proposed for facility construction.

Residues from Aqueous Film Forming Foam (fire-fighting foam) containing perfluorooctanesulfonic acid and perfluorooctanoic acid were recently detected in ground water. It appears to have resulted from using this foam for training at the on-base fire stations and in response to actual aircraft fires. Eielson AFB is working closely with USEPA and Alaska Department of Environmental Conservation (ADEC) to determine future course(s) of action(s). It is not expected that response actions would interfere with F-35A construction; however, some additional measures during construction may be required if dewatering is necessary. The F-35A operations would not increase health risks or alter existing conditions of these residues when compared to the No-Action Alternative.

***Airspace*:** The Air Force has specific emergency-response procedures for aircraft mishaps involving composite materials contained in Technical Order 00-105E-9. Air Force Manual 10-2504 (December 2009) provides guidance for responding to major accidents and natural disasters and Air Force Instruction 10-2501 provides response planning guidelines for major accident response, natural disasters, and enemy attack. These procedures would be followed to ensure no adverse impacts to areas underlying northern JPARC airspace from hazardous materials and toxic substances.

ES.7.13 Recreational and Visual Resources

***Base*:** Under the Proposed Action Alternative, the number of total airfield operations would increase, resulting in increased noise levels in areas used for recreational purposes on and off base. Military jet overflights can adversely affect recreational activities for those who value or expect a natural soundscape. However, visitors to recreational sites can distinguish between concepts of annoyance and interference produced by aircraft sound. Annoyance is an emotional reaction, while interference is more of a

subjective judgment. Studies have indicated that if visitors know that they could see or hear aircraft while in a remote area, they are less annoyed by aircraft noise. Inhabitants of the base and surrounding communities have lived with a military presence since the establishment of Eielson AFB in 1943. Therefore, any increase in sound would not adversely affect the setting or experiences that people have on or off base. In terms of the visual landscape, new facilities would be consistent with existing military base facilities. For the entry and merge lanes, proposed along Richardson Highway, adjacent to the South Gate, no recreational areas would be impacted nor would this expansion change the visual aspect of the existing road. Under the Proposed Action Alternative, there would be no adverse impacts to recreational and visual resources at and around the base.

***Airspace*:** There are many recreational and special use areas under the northern JPARC airspace. The Air Force has made an extensive effort to identify these areas, and where possible, to minimize unavoidable noise and visual impacts. As noted earlier, JPARC airspace is managed in accordance with the 11th Air Force Alaska Airspace Handbook, which identifies all the limitations, restrictions, and mitigations such as seasonal flight avoidance areas that military pilots must comply with when operating in these airspace units. Dissemination of this information is accomplished by briefing all Air Force and Air Force-sponsored pilots prior to operating in the airspace, through the 11th Air Force Alaska Airspace Handbook, and access to the 11th Air Force website.

Under the Proposed Action Alternative, there would be an increase in the frequency of airspace operations; however, the noise levels would remain similar as found under the No-Action Alternative. In no instances would the L_{dnmr} exceed 52 dB, and with the exception of the Steese National Conservation Area/Birch Creek WSR, all other special use areas would experience L_{dnmr} of less than 45 dB during the busiest month (i.e., during major flying exercises between April and October). In terms of supersonic operations, C-weighted DNL would remain below 54 dB over special use areas, with only the Steese National Conservation Area/Birch Creek WSR, and the Charley and Fortymile WSRs experiencing a 1-dB increase. Yukon-Charley Rivers National Preserve, Yukon Flats National Wildlife Refuge, and Lake George would experience a one-boom per busiest month increase and the Steese National Conservation Area/Birch Creek WSR and Charley WSR would experience a two-boom per busiest month increase.

Some individuals may perceive this noise increase as interfering with the quality of their recreation; however, the F-35A would be conducting activities similar to those currently conducted by the F-16, but at predominantly higher altitudes, resulting in a negligible increase in noise levels on the ground. Overflights would not change the visual experience of the characteristic landscape as well. Consequently, in combination with the currently identified standard operation procedures in JPARC airspace, any increases in noise levels associated with the Proposed Action Alternative would not result in adverse impacts to recreational or visual resources.

ES.8 SUMMARY COMPARISON OF IMPACTS BY ALTERNATIVE

Table ES-12 provides a summary comparison of impacts for each of the resource categories. The last column provides mitigation measures that are proposed for implementation beyond existing permitting processes, best management practices, and standard operating procedures undertaken by Eielson AFB at the base level, in northern JPARC airspace by the 11th Air Force, and at the impact areas managed by the Air Force and Army.

Table ES-12. Summary Comparison of Impacts by Alternative

Resource Areas		*No Action*	*Proposed Action*	*Mitigation Measures*
Airfield and Airspace Operations and Management				
Base:	Airfield Operations	No impacts to airfield operations and management.	There would be no adverse impacts to Eielson AFB airfield and airspace structure or management.	No mitigation measures proposed on base.
Airspace:	Training and Exercise Operations	No effect to northern JPARC airspace use or management.	No changes to airspace management. The airspace has sufficient ability to absorb the increased aircraft operations. Ongoing interaction between Eielson AFB, the Alaska Civil/Military Aviation Council, and state and federal agencies, as well as continued use of the SUAIS, ensures continued compatibility of military and commercial/civil aviation in the JPARC airspace. No adverse impacts are anticipated to airspace operations and management through continued adherence to JPARC standard operating procedures. *Civil and Commercial Aviation Airspace Use* - The mishap potential between civil and military would be low through continued adherence of JPARC operational procedures.	No mitigation measures proposed.
Acoustic Environment				
Base:	Population, Land Use Compatibility, and Domesticated Animals and Wildlife	Existing noise impacts would continue.	On-base noise exposure would noticeably increase for residential areas, schools, and a child development center; there would be a potential for on-base noise impacts. Off base, an increased number of residences in Moose Creek would experience noise levels between 65 and 70 decibel A-weighted Day-Night Average Sound Level (dB DNL) and a day care center would experience an increase in the number of classroom learning interference events.	Due to the potential for people and households to experience noise levels 65 dB DNL and greater, possible noise-attenuating measures could include re-glazing loose windowpanes, replacing cracked windowpanes, putting in weather stripping, adding insulation, and baffling vents. As the Air Force does not own the housing, either on or off base, noise attenuation measures would be the responsibility of the owners. The Air Force does not own the off-base schools, and on base, the FNSB School District leases the schools from the Air Force. Therefore, the undertaking of noise attenuation measures would be the responsibility of the FNSB School District. Noise-attenuating measures for schools could include, but are not limited to, installing sound absorbing materials in the ceiling and walls, fixing cracked windowpanes, sealing any gaps between the walls, floor, and ceiling, and installing insulation in building cavities. The American National Standard Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools, Parts 1 and 2 from the American National Standards Institute S12.60 provide guidance for noise attenuating design criteria for schools.

Table ES-12. Summary Comparison of Impacts by Alternative

Resource Areas		***No Action***	***Proposed Action***	***Mitigation Measures***
Airspace:		Noise levels would remain consistent with baseline conditions.	Subsonic and supersonic operations would not generate noise levels that would adversely affect underlying populations of the northern JPARC airspace.	No mitigation measures proposed.
Air Quality				
Base:	Criteria Pollutants, Conformity Applicability, Greenhouse Gases, and Hazardous Air Pollutants	Emissions of criteria pollutants and greenhouse gases would not affect regional air quality or attainment status.	Emissions of criteria pollutants and greenhouse gases would not introduce adverse impacts to affect regional air quality or attainment status.	No mitigation measures proposed on base.
Airspace:		Emissions of criteria pollutants and greenhouse gases would not affect regional air quality or Prevention of Significant Deterioration for Denali National Park, as well as to the Yukon-Charley Rivers National Preserve and Steese National Conservation Area. No adverse impacts.	Emissions of criteria pollutants and greenhouse gases would not affect regional air quality or deteriorate air quality in: Denali National Park (Prevention of Significant Deterioration Class 1 Area); Yukon-Charley Rivers National Preserve; Yukon Flats National Wildlife Refuge; the Steese National Conservation Area; or designated wild and scenic rivers. No adverse impacts to regional air quality within the northern JPARC airspace. In terms of Greenhouse Gas (GHG) emissions, the computed carbon dioxide equivalent or CO_2(e) emissions after final beddown for both squadrons are 31,704 metric tons, or 0.937 percent of the existing CO_2(e) emissions for the FNSB region. Accordingly, no adverse impacts from GHG emissions due to the Proposed Action Alternative.	No mitigation measures proposed.

Table ES-12. Summary Comparison of Impacts by Alternative

Resource Areas		*No Action*	*Proposed Action*	*Mitigation Measures*
Safety				
Base:		Ground and flight safety considerations associated with current operations would remain in place. No adverse impacts.	*Fire Risk and Management* - No adverse impacts to current fire-fighting abilities and mutual aid agreements. If new information and/or fire-fighting techniques associated with composite materials burned during an accident are identified, then local fire-fighting departments will be informed. *Accident Potential Zones* - No adverse impacts to existing Accident Potential Zones or Clear Zones. *Aircraft Mishaps* - Operational mishap rate would be similar to other tactical fighter jet aircraft like the F-16 and F-15, and therefore, no adverse impacts with continued application of existing operating procedures. *Bird/Wildlife-Aircraft Strike Hazards* - BASH is not anticipated to change markedly and affect this facet of safety at Eielson AFB; no adverse impacts with continued application of existing avoidance procedures.	No mitigation measures proposed on base.
Airspace:	Accident Potential Zones (base), Mishaps, Bird/Wildlife-Aircraft Strike Hazards	Continuation of plans, procedures, and processes currently used for minimizing flight safety risks for all flight activities within the existing JPARC airspace would incur no adverse impacts.	Total operations within the northern JPARC airspace and ranges would remain within its capability and capacity. No new accident response procedures would be required. If new information and/or fire-fighting techniques associated with composite materials burned during an accident are identified, then local fire-fighting departments will be informed. No adverse impacts. *Fire Risk and Management* - All guidance, regulations, and instructions for ordnance delivery at the three impact areas, and flare use in the airspace would be adhered to; fire response and suppression capabilities would continue to meet all requirements. Mutual aid agreements and coordination between Air Force personnel and wildland fire-fighting personnel regarding fire detection and response would continue. No adverse impacts. *Aircraft Mishaps* - No adverse impacts with continued application of existing JPARC standard operating procedures. *Bird/Wildlife-Aircraft Strike Hazards* - Overall potential for bird-aircraft strikes is not anticipated to be statistically different from the No-Action Alternative. No adverse impacts.	No mitigation measures proposed.

Table ES-12. Summary Comparison of Impacts by Alternative

Resource Areas		*No Action*	*Proposed Action*	*Mitigation Measures*
Socioeconomics				
Base:	Economics, Demographics, Population, Housing, Public Schools, Transportation, Utilities, and Emergency Medical/Police/ Fire Response	*Population, Demographics, and Economics* - Socioeconomic conditions related to population, demographics, and economics would remain consistent with current conditions. *Schools, Housing, Transportation and Utilities* - Socioeconomic conditions related to schools, housing, transportation, and utilities would remain consistent with current conditions. *Health, Fire, and Crime Response* - Socioeconomic conditions related to health, fire, and crime response services would remain consistent with current conditions.	*Population* - Population would increase by 2.7 percent to FNSB. *Demographics* - General demographics of the regional population would not change in any material way. *Economics* - Positive impact to local economy. *Schools* - Increase in student enrollment would be within the current capacity of FNSB School District. *Housing* - It is estimated there would be available housing to support construction personnel in the short term as well as military and civilian families and unaccompanied personnel in the long term. No adverse impacts. *Transportation and Utilities* - Additional on- and off-base residential population is not anticipated to strain the base or regional transportation and utilities infrastructure. *Health, Fire, and Crime Response* - Additional off-base residential population is not anticipated to strain the capacity of current health, fire, and crime response services in the region.	No mitigation measures proposed on base.
Airspace:	Subsistence	No changes to existing conditions in aircraft operations within JPARC airspace. Continued compliance with flight avoidance areas and seasonal flight restrictions in identified subsistence areas would continue. No adverse impacts to subsistence pursuits.	No impacts to the population, demographics, economics, schools, housing, transportation, utilities, or health, fire and crime response. Continued compliance with flight avoidance areas and seasonal flight restrictions over identified subsistence areas would continue to minimize potential adverse impacts.	No mitigation measures proposed.
Land Management				
Base:	Local, state, and federal land management plans	No change from baseline conditions, therefore, no impacts to management.	No changes to land use designations or management objectives on Eielson AFB would occur. Off base, the Proposed Action Alternative would not require purchase of any lands or change how lands are managed. No adverse impacts to on-base land management are anticipated.	No mitigation measures proposed on base.
Airspace:	Local, state, and federal land management plans	No change from baseline conditions, therefore, no impacts to land management.	No lands would be acquired underneath the northern JPARC airspace and aircraft operations would be consistent with current conditions. Agency land management plans and objectives would not be affected by F-35A operations in JPARC airspace where aircraft have been operating for several decades. There would be no adverse impacts to land management under the airspace.	No mitigation measures proposed.

Table ES-12. Summary Comparison of Impacts by Alternative

Resource Areas		*No Action*	*Proposed Action*	*Mitigation Measures*
Cultural Resources				
Base:	Traditional, Prehistoric and Historic Archaeological and Architectural Resources	*Traditional/Alaska Native* - No change when compared to baseline conditions on Eielson AFB, therefore, no impacts to traditional Alaska Native resources. *Archaeological and Architectural* - No change to baseline conditions, therefore, no adverse impacts to archaeological and architectural resources.	*Traditional/Alaska Native* - No direct or indirect adverse impacts to Traditional or Alaska Native resources. *Archaeological and Architectural* - No known prehistoric sites have been recorded at Eielson AFB. Therefore, no direct or indirect adverse impacts to prehistoric archaeological sites are anticipated. While construction would occur in the Quarry Hill Munitions Storage Historic District, all development would be undertaken in accordance with the Program Comment. The Flightline Historic District would continue to experience the indirect effect of aircraft operations on the flight line; however, this would be in keeping with the setting of the district and would not affect the integrity of the district. The Alaska State Historic Preservation Office concurred with the Air Force finding of no effect to historic properties in the area of potential effect.	No mitigation measures proposed on base.
Airspace:	Traditional Resources	*Traditional/Alaska Native* - No change when compared to baseline conditions underlying northern JPARC airspace. No adverse impacts to traditional Alaska Native resources. *Archaeological and Architectural* - No change compared to baseline conditions in archaeological and architectural resources underlying northern JPARC airspace, therefore, no adverse impacts to these resources.	*Traditional/Alaska Native* - Continued adherence by F-35A pilots to seasonal flight adjustments, restrictions, and limitations in the northern JPARC airspace would minimize any adverse impacts to traditional resources or areas supporting subsistence hunting. *Archaeological and Architectural* - No damage to historic structures from supersonic or subsonic operations is anticipated. Therefore, no direct or indirect adverse impacts to archaeological or architectural resources would occur in the area of potential effect.	No mitigation measures proposed.

Table ES-12. Summary Comparison of Impacts by Alternative

Resource Areas		*No Action*	*Proposed Action*	*Mitigation Measures*
Environmental Justice and Protection of Children				
Base:	Low Income, Minority, Children, and the Elderly	The No-Action Alternative would not disproportionately adversely affect low-income or minority populations. No adverse impacts are anticipated to children or the elderly.	The Proposed Action Alternative does not introduce any adverse impacts to air quality; safety; water quality; or hazardous materials/waste, toxic substances, and contaminated sites. Therefore, no disproportionate adverse impacts to low-income or minority populations. No adverse impacts to the elderly were identified. There could be adverse impacts for children attending the on-base schools and child development center, as well as children at an off-base day care center. The increase in the number of aircraft noise intrusions during classroom instruction could result in teaching disruptions and interfere with the children's ability to learn.	The Air Force does not own the off-base schools, and on base, the FNSB School District leases the schools from the Air Force. Therefore, the undertaking of noise attenuation measures would be the responsibility of the FNSB School District. Noise-attenuating measures could include, but are not limited to installing sound absorbing materials in the ceiling and walls, fixing cracked windowpanes, sealing any gaps between the walls, floor, and ceiling, and installing insulation in building cavities. The American National Standard Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools, Parts 1 and 2 from the American National Standards Institute S12.60 provide guidance for noise attenuating design criteria for schools.
Airspace:			The Proposed Action Alternative does not introduce any adverse impacts to noise; air quality; safety; water quality; or hazardous materials/waste, toxic substances, and contaminated sites. Therefore, no disproportionate adverse impacts would be introduced to low-income or minority populations. There would also be no adverse impacts to children or the elderly who live under the northern JPARC airspace.	No mitigation measures proposed.
Natural Resources				
Base:	Wildlife, Vegetation, Wetlands, and Special Status Species	No adverse impacts with continued adherence to federal, state, local, and base rules and regulations and those codified in the Integrated Natural Resource Management Plan.	*Wildlife* - Increased noise and activity due to construction and renovation projects would be short term, and would not present adverse impacts to wildlife populations. *Vegetation* - No critical habitat would be disturbed, no adverse impacts. *Wetlands* - Approximately 17 acres would be removed. No practicable alternative to this adverse impact was identified. *Special Status Species* - No federally listed species are located within the area to be developed and therefore, no impacts. No adverse impacts to eagles or migratory birds.	Through the 404 permitting process, Eielson AFB will either purchase wetland credits from existing mitigation banks or pay in *lieu* of fees to offset the wetlands (type and size) removed.

Table ES-12. Summary Comparison of Impacts by Alternative

Resource Areas		***No Action***	***Proposed Action***	***Mitigation Measures***
Airspace:	Wildlife, Special Status Species	No adverse impacts to underlying special status species with continued adherence to seasonal flight limitations and avoidance areas in JPARC airspace.	*Wildlife* - No adverse impacts to threatened and endangered species. Current mitigations identified in the 11th Air Force Alaska Airspace Handbook and those that the JPARC EIS have identified (which will be fully implemented by 2021), provide protection to "at risk" or special status species that minimizes potential adverse impacts. *Special Status Species* - No adverse impacts to federally listed species, eagles, or migratory birds.	No mitigation measures proposed.
Earth Resources				
Base:	Topography, Geology, Soils, and Seismology	Continued use of erosion control measures to minimize sedimentation.	Approximately 66 acres would be disturbed, of which 21 acres are vegetated. Potential adverse impacts would be minimized by adhering to sedimentation and erosion minimization measures required for all construction projects under the permitting process.	No mitigation measures proposed on base.
Airspace:		No impacts.	Ground disturbance due to increased ordnance and munitions use would not present adverse impacts through continued implementation of land management practices identified in Air Force and Army Integrated Natural Resource Management Plans.	No mitigation measures proposed.
Water Resources				
Base:	Water Quantity/ Quality, Stormwater, Wastewater, and Floodplains	Continued adherence to the Stormwater Pollution Prevention and avoidance of floodplains.	*Quantity* - There is existing on- and off-base capacity to provide potable water and support wastewater treatment; there would be no adverse impacts. *Quality* - Ground water would not be affected or degraded; no adverse impacts to water quality. *Stormwater* - Sufficient stormwater drainage systems exist to support the approximate 21 acres of impervious surfaces introduced. Retention structures would be provided to collect storm water from any newly developed areas. They will be designed to discharge no more than the pre-existing rate into the drainage system in order not to increase flooding or erosion hazards. Therefore, no adverse impacts. *Floodplains* - Facilities within the 100-year floodplain would be established and impact 5 acres according to the FNSB delineation and up to 56 acres according to Federal Emergency Management Agency (FEMA) mapping data. No matter which floodplain map is used, there is no other practicable alternative for locating these facilities along and adjacent to the flight line in the floodplain. There would be adverse impacts.	Using the FEMA, 100-year floodplain data, the Air Force will include strategies to mitigate floodplain impacts in facility design and construction. These can include elevating facilities above the floodplain to reduce water infiltration, anchoring structures to prevent movement, and including impervious surfaces to eliminate sinks and/or swells associated with water levels. However, as the proposed facilities need to be constructed at the same elevations as the existing facilities along the South Loop, all existing and new facilities will be 8 to 10 feet below the elevation of the 100-year flood event. Because raising the floor elevations above the floodplain is not practicable, and there are no other on-base locations that meet F-35A facility operational and safety requirements, a Finding of No Practicable Alternative is incorporated into the Final EIS. If the Air Force chooses to implement the Proposed Action Alternative, it is accepting the potential flood risk for these facilities.

Table ES-12. Summary Comparison of Impacts by Alternative

Resource Areas		*No Action*	*Proposed Action*	*Mitigation Measures*
Airspace:		No impacts.	No adverse impacts.	No mitigation measures proposed.
Hazardous Materials and Wastes, Toxic Substances, and Contaminated Sites				
Base:	Use, Storage Disposal, and Installation/ Environmental/ Compliance Restoration Programs/ Military Response Areas	Established procedures for storing, using, and disposing of hazardous materials and waste would continue to be followed. Toxic substances would be consistent with baseline levels. Contaminated sites would continue to be managed under the Installation, Environmental, and Compliance Restoration Plans.	No new hazardous materials would be introduced; existing disposal systems are in place and have the capacity to support increased total hazardous waste. Toxic substances associated with the F-35A are minor and any construction on or near contaminated sites would adhere to federal, state, local, and base management practices to avoid health and safety risks. No adverse impacts.	No mitigation measures proposed on base.
Airspace:		No impacts.	No adverse impacts.	No mitigation measures proposed.
Recreational and Visual Resources				
Base:	Facilities and Development Compatibility	Noise levels would not change the recreational use of on- or off-base recreational facilities. In terms of visual impacts, new facility design would be consistent with the existing visual landscape found on a military installation. No adverse impacts are anticipated.	No construction would occur on or near parks adjacent to the base or with the expansion of the South Gate. Changes in noise levels would not affect recreational pursuits on base or in locations near the base. The visual aspect would be consistent with the No-Action Alternative conditions found on a military installation. No adverse impacts to recreational or visual resources on or immediately off base.	No mitigation measures proposed on base.
Airspace:	Special Use Areas and Visual Landscape Compatibility	No change to baseline noise and visual aspects in northern JPARC airspace. Continued adherence to existing avoidance areas, seasonal and altitude restrictions, and standard operational procedures identified in the 2015 11th Air Force Alaska Airspace Handbook and those identified in the 2013 JPARC EIS ROD, minimize the potential for adverse impacts recreational or visual resources.	There would be an increase in the frequency of airspace operations and associated noise levels would negligibly increase when compared to the No-Action Alternative. Some individuals may perceive the noise increase as interfering with the quality of their recreation. However, the F-35A would be conducting activities similar to those currently conducted by the F-16 and transient jet aircraft, but at predominantly higher altitudes, resulting in a negligible increase in noise levels on the ground. Overflights also would not change the visual aspect of the landscape where military aircraft have been operating for several decades. Consequently, in combination with the existing avoidance areas, seasonal and altitude restrictions, and standard operating procedures identified in the 2015 11th Air Force Alaska Airspace Handbook, increases in noise associated with the Proposed Action Alternative would minimize the potential for adverse impacts to recreational or visual resources.	No mitigation measures proposed.

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United States Air Force
F-35A Pacific Operational Beddown
Final Environmental Impact Statement

This is the Executive Summary of the Final EIS for the F-35A Pacific Operational Beddown at Eielson AFB in Alaska. Attached to this Executive Summary is a CD (located in the pocket below) containing the entire Final EIS and appendices. To view the Final EIS and appendices, you will need Adobe Acrobat® Reader. If you do not already have Adobe Acrobat® Reader, you can download it from www.adobe.com. To view:

- Insert the CD into the computer's CD/DVD drive.
- Open the CD/DVD drive's directory and double-click on the file named F-35A Pacific Operational Beddown Final EIS.pdf.
- Navigate by scrolling through the document or clicking the bookmarks that appear on the left of the document window.

The CD files are read-only, which means you can view and/or print them from the CD. In addition, the document can be viewed and downloaded from the project web site at https://www.PACAF-F35Aeis.com. Public involvement is a cornerstone of the NEPA process; publication of this Final EIS marks the beginning of a 30-day waiting period.

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